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State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020
FAX (614) 644-2329

Fanning
RECEIVED MAY 05 1992
WMD RCRA
RECORD CENTER *Rev A*

George V. Voinovich
Governor

Donald R. Schregardus
Director

October 23, 1991

Re: UCAR Carbon Company
EPA ID No.: OHD003926748
Ohio ID No.: 02-18-0104
Completion of Closure

UCAR Carbon Company
Attn: Mr. D. A. Mieskowski
PO Box 6116
Cleveland, Ohio 44101

Dear Mr. Mieskowski:

According to our records, on March 7, 1989, the Director of Ohio EPA approved a closure plan submitted by UCAR Carbon Company for the hazardous waste container storage areas located at 12900 Snow Road, Parma, Ohio 44130. On December 27, 1990 and September 23, 1991, UCAR Carbon Company submitted to the Director certification documents that the hazardous waste container storage areas had been closed according to the specifications in the approved closure plan. Ohio EPA District Office personnel completed a certification of closure inspection and a review of documents pertaining to the hazardous waste container storage areas on September 26, 1991. Based on this inspection and review, the Ohio EPA has determined that the hazardous waste container storage areas have been closed in accordance with the approved closure plan and Rules 3745-66-12 through 3745-66-15 of the Ohio Administrative Code (OAC) and UCAR Carbon Company will maintain the status of a large quantity generator of hazardous waste.

You should continue to use the identification number assigned to you for purposes of compliance with the Ohio EPA manifest, recordkeeping and reporting requirements for large quantity generators of hazardous waste as appropriate.

If you have any questions concerning your current status, please contact the Ohio EPA, Northeast District Office, Attn: Greg Taylor, 2110 E. Aurora Rd., Twinsburg, Ohio 44087, tel.: (216) 425-9171.

In accordance with Rules 3745-66-43(H) and 3745-66-47(E) of the OAC, UCAR Carbon Company will not be required to maintain financial assurance for closure costs and liability coverage for accidental occurrences at the facility.



State of Ohio Environmental Protection Agency

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George V. Voinovich
Governor

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Permit Appl. No. _____

Facility Name

Signature of Executive Officer

Title

Date

Note: Establishment of a hazardous waste facility without an effective permit is prohibited pursuant to Sections 3734.02 and 3634.11 of the Ohio Revised Code.

(A) All permit applications shall be signed as follows:

- (1) For a corporation: by a responsible corporate officer. For the purpose of this rule, a "responsible corporate officer" means:
 - (a) A president, secretary, treasurer or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or
 - (b) The manager of one or more manufacturing, production or operation facilities employing more than two hundred fifty persons or having gross annual sales or expenditures exceeding twenty-five million dollars (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
- (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or
- (3) For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

(B) All reports required by permits and other information requested by the director shall be signed by a person described in paragraph (A) of this rule, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- (1) The authorization is made in writing by a person described in paragraph (A) of this rule;
- (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility (a duly authorized representative may thus be either a named individual or any individual occupying a named position); and
- (3) The written authorization is submitted to the director.

(C) If an authorization under paragraph (B) of this rule is no longer accurate because a different individual or position has responsibility for the overall operation of a facility, a new authorization satisfying the requirements of paragraph (B) of this rule shall be submitted to the director prior to or together with, any reports, information, or applications to be signed by an authorized representative.



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RECEIVED MAY 05 1991
WMD RCRA
RECORD CENTER *Pack 4*

Francine

George V. Voinovich
Governor

CLOSURE PLAN EXTENSION APPROVAL

CERTIFIED MAIL

July 23, 1991

Re: Closure Plan Extension
UCAR Carbon Company, Inc.
OHD003926748

Ms. Vicki A. Vesel
UCAR Carbon Company, Inc.
12900 Snow Road
P.O. Box 6116
Cleveland, Ohio 44101

Dear Ms. Vesel:

On July 2, 1991, UCAR Carbon Company, Inc. submitted a request for an extension to the closure period specified in the approved closure plan for 180 days until December 25, 1991. The extension request was submitted pursuant to Rule 3745-66-13(B) of the Ohio Administrative Code (OAC) as closure will require longer than the 180 day period specified in OAC Rule 3745-66-13. UCAR Carbon Company, Inc. has requested this extension of time due to difficulties in defining and remediating the full extent of contamination.

UCAR Carbon Company, Inc. will continue to take all steps to prevent a threat to human health and the environment from the unclosed but inactive waste management unit per OAC Rule 3745-66-13(B) (2).

An extension of time allowed for closure is hereby granted until December 25, 1991.

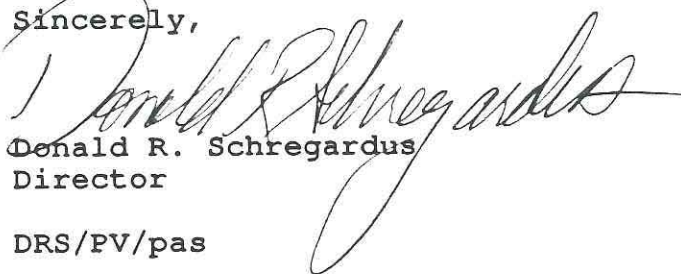
Please be advised that approval of this closure extension request does not release UCAR Carbon Company, Inc. from any responsibilities as required under the Hazardous and Solid Waste Amendments of 1984 regarding corrective action for all releases of hazardous waste or constituents from any solid waste management unit, regardless of the time at which waste was placed in the unit.



UCAR Carbon Company, Inc.
Page Two

When closure is completed, the Ohio Administrative Code Rule 3745-66-15 requires the owner or operator of a facility to submit to the Director of the Ohio EPA certification by the owner or operator and a qualified, independent, registered professional engineer that the facility has been closed in accordance with the approved closure plan. The certification by the owner or operator shall include the statement found in OAC 3745-50-42(D). These certifications should be submitted to: Ohio Environmental Protection Agency, Division of Solid and Hazardous Waste Management, Attn: Thomas Crepeau, Data Management Section, P.O. Box 1049, Columbus, Ohio 43266-0149.

Sincerely,



Donald R. Schregardus
Director

DRS/PV/pas

cc: Paul L. Vandermeer, Ohio EPA, DSHWM
Lisa Pierard, USEPA, Region V
Joel Morbito, USEPA, Region V
Tom Crepeau, Ohio EPA, DSHWM Central File
Greg Taylor, Ohio EPA, NEDO



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020 Fax (614) 644-2329

Richard F. Celeste
Governor

CLOSURE PLAN EXTENSION APPROVAL

CERTIFIED MAIL

September 19, 1990

Re: Closure Plan Extension
UCAR Carbon Company, Inc., Parma
OHD 003 926 748/02-18-0104

Davis a Mieskowski
Manager, Health, Safety, and Environmental Protection
UCAR Carbon Company, Inc.
P.O. Box 6116
Cleveland, Ohio 44101

Dear Mr. Mieskowski:

On August 17, 1990, UCAR Carbon Company, Inc. submitted a request for an extension to the closure period specified in the approved closure plan for 120 days. The extension request was submitted pursuant to OAC Rule 3745-66-13(B) as closure will require longer than the 180 days period specified in OAC Rule 3745-66-13. UCAR Carbon Company, Inc. has requested this extension due to the need to remove contaminated soil from Container Storage Area No. 1.

Therefore, closure of Container Storage Area No. 1 will require greater than 180 days because of the need to remove contaminated soil. UCAR Carbon Company, Inc. will continue to take all steps to prevent a threat to human health and the environment from the closed but inactive waste management unit per OAC Rule 3745-66-13(B)(2).

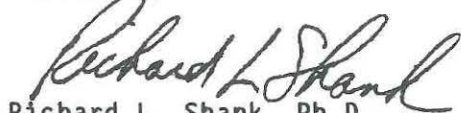
An extension of time allowed for closure is hereby granted. All closure activities shall be completed by December 28, 1990.

Mr. Mieskowski
Page Two

Please be advised that approval of this closure extension request does not release UCAR Carbon Company, Inc. from any responsibilities as required under the Hazardous and Solid Waste Amendments of 1984 regarding corrective action for all releases of hazardous waste or constituents from any solid waste management unit, regardless of the time at which waste was placed in the unit.

When closure is completed, the Ohio Administrative Code Rule 3745-66-15 requires the owner or operator of a facility to submit to the Director of the Ohio EPA certification by the owner or operator and a registered professional engineer that the facility has been closed in accordance with the approved closure plan. The owner or operator certification shall follow the format specified in OAC 3745-50-42(D). These certifications should be submitted to: Ohio Environmental Protection Agency, Division of Solid and Hazardous Waste Management, Attn: Tom Crepeau, Program Planning and Management Section, P.O. Box 1049, Columbus, Ohio 43266-1049.

Sincerely,



Richard L. Shank, Ph.D.
Director

RLS/RM/pas

cc: Tom Crepeau, DSHWM Central File, Ohio EPA
Lisa Pierard, USEPA, Region V
Greg Taylor, NEDO, Ohio EPA
Randy Meyer, DSHWM, Ohio EPA
Joel Morbito, USEPA, Region V

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State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020 Fax (614) 644-2329

Richard F. Celeste
Governor

Francine

CLOSURE PLAN APPROVAL

CERTIFIED MAIL

December 28, 1989

Re: Closure Plan
UCAR Carbon Company, Inc.
OHD 003 926 748/02-18-0104

D.A. Mieskowski, Manager
Health, Safety, & Environmental Protection
UCAR Carbon Company, Inc.
P.O. Box 6116
Cleveland, Ohio 44101

Dear Mr. Mieskowski:

On March 7, 1989, UCAR Carbon Company, Inc. submitted to Ohio EPA a closure plan for two (2) hazardous waste container storage areas located at 12900 Snow Road, Parma, Ohio. Revisions to the closure plan were received on September 20, 1989, in response to my August 18, 1989, closure plan disapproval letter. The closure plan was submitted pursuant to Rule 3745-66-12 of the Ohio Administrative Code (OAC) in order to demonstrate that UCAR Carbon Company, Inc.'s proposal for closure complies with the requirements of OAC Rules 3745-66-11 and 3745-66-12.

The public was given the opportunity to submit written comments regarding the closure plan of UCAR Carbon Company, Inc. in accordance with OAC Rule 3745-66-12. No comments were received by Ohio EPA in this matter.

Based upon review of the company's submittal and subsequent revisions, I conclude that, with modifications, the closure plan for the hazardous waste facility at UCAR Carbon Company, Inc. meets the performance standard contained in OAC Rule 3745-66-11 and complies with the pertinent parts of OAC Rule 3745-66-12.

The closure plan submitted to Ohio EPA by UCAR Carbon Company, Inc. is hereby approved with the following modifications:

1. The performance standards listed on pages 5-6 for determining if the sites have been or are contaminated shall be revised to be consistent with the clean levels for soil and rinseate discussed on pages 19-20 for Container Storage Area No. 1 and on page 23 for Container Storage Area No. 2 (rinseate only).

I certify this to be a true and accurate copy of the official document as filed in the records of the Ohio Environmental Protection Agency.

By: Mary Carri Date 12-28-89

Ohio Environmental Protection Agency
ENTERED DIRECTOR'S JOURNAL

DEC 28 1989

495-9

2. On page 18 the closure plan states: "If contamination is found, remedial measures (soil excavation/disposal or vapor extraction) will be initiated." If contamination is found, UCAR shall remediate the area by excavating and removing contaminated soils to an off-site hazardous waste treatment, storage, disposal facility. If another means of remediation, including in-situ treatment, is contemplated, UCAR shall submit to Ohio EPA an amendment to the existing closure plan. Amended closure plans are processed by Ohio EPA in accordance with OAC 3745-66-12.
3. Background areas for soil and rinseate sampling shall be selected in consultation with Greg Taylor, Ohio EPA, NEDO.
4. Where more than one SW-846 test method exists for a parameter, UCAR Carbon Company shall use the test method with the lowest detection limit.
5. On page 25, the closure plan states: "The hazardous waste code assigned to these waste residues will depend upon which constituent was found in them." Hazardous waste codes shall be assigned according to the constituents found in the waste residue and the purpose for which the constituent may have been used. For example, if soil contaminated with methylene chloride is found and any spent methylene chloride (i.e., used for degreasing purposes) was stored on the unit, then the waste code designation shall be F001, not U080.
6. UCAR Carbon Company shall comply with any land disposal restrictions under 40 CFR 268 applicable to the wastes stored on the storage pads or generated as a result of closure activities.
7. UCAR Carbon Company shall notify Ohio EPA, NEDO, at least five (5) days in advance of all critical activities.

Please be advised that approval of this closure plan does not release UCAR Carbon Company, Inc. from any responsibilities as required under the Hazardous and Solid Waste Amendments of 1984 regarding corrective action for all releases of hazardous waste or constituents from any solid waste management unit, regardless of the time at which waste was placed in the unit.

Notwithstanding compliance with the terms of the closure plan, the Director may, on the basis of any information that there is or has been a release of hazardous waste, hazardous constituents, or hazardous substances into the environment, issue an order pursuant to Section 3734.20 et seq of the Revised Code or Chapters 3734 or 6111 of the Revised Code requiring corrective action or such other response as deemed necessary; or initiate appropriate action; or seek any appropriate legal or equitable remedies to abate pollution or contamination or to protect public health or safety or the environment.

I certify this to be a true and accurate copy of the official document as filed in the records of the Ohio Environmental Protection Agency.

By: Mary Casani Date 12-28-89

Ohio Environmental Protection Agency
ENTERED DIRECTOR'S JOURNAL

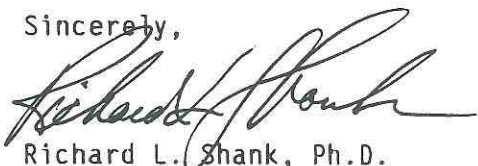
DEC 28 1989

Nothing here shall waive the right of the Director to take action beyond the terms of the closure plan pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. 99-499 ("CERCLA") or to take any other action pursuant to applicable Federal or State law, including but not limited to the right to issue a permit with terms and conditions requiring corrective action pursuant to Chapters 3734 or 6111 of the Revised Code; the right to seek injunctive relief, monetary penalties and punitive damages, to undertake any removal, remedial, and/or response action relating to the facility, and to seek recovery for any costs incurred by the Director in undertaking such actions.

You are notified that this action of the Director is final and may be appealed to the Environmental Board of Review pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Environmental Board of Review within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency and the Environmental Enforcement Section of the Office of the Attorney General within three (3) days of filing with the Board. An appeal may be filed with the Environmental Board of Review at the following address: Environmental Board of Review, 236 East Town Street, Room 300, Columbus, Ohio 43266-0557.

When closure is completed, the Ohio Administrative Code Rule 3745-66-15 requires the owner or operator of a facility to submit to the Director of the Ohio EPA certification by the owner or operator and an independent registered professional engineer that the facility has been closed in accordance with the approved closure plan. The certification by the owner or operator shall include the statement found in OAC 3745-50-42(D). These certifications should be submitted to: Ohio Environmental Protection Agency, Division of Solid and Hazardous Waste Management, Attn: Thomas Crepeau, Program Planning and Management Section, P.O. Box 1049, Columbus, Ohio 43266-0149.

Sincerely,



Richard L. Shank, Ph.D.
Director

RLS/RM/pas

cc: Randy Meyer, Ohio EPA, DSHWM
Joel Morbito, USEPA - Region V
Tom Crepeau, Ohio EPA, DSHWM
Dave Wertz, NEDO, Ohio EPA

Lisa Pierard, USEPA-Region V
Greg Taylor, NEDO, Ohio EPA

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I certify this to be a true and accurate copy of the official document as filed in the records of the Ohio Environmental Protection Agency.

By: Mary Corwin Date 12-28-89

Ohio Environmental Protection Agency
ENTERED DIRECTOR'S JOURNAL

DEC 28 1989



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

Richard F. Celeste
Governor

CLOSURE PLAN DISAPPROVAL
Issuance Date August 18, 1989
Effective Date September 18, 1989

CERTIFIED MAIL

August 18, 1989

Re: Closure Plan
UCAR Carbon Company, Inc.
OHD 003 926 748/02-18-0104

Mr. D.A. Mieskowski, Manager
Health, Safety, & Environmental Protection
UCAR Carbon Company, Inc.
P.O. Box 6116
Cleveland, OH 44101

RECEIVED
AUG 21 1989

OFFICE OF RCRA
WASTE MANAGEMENT DIVISION
EPA, REGION V

Dear Mr. Mieskowski:

On March 7, 1989, UCAR Carbon Company, Inc. submitted to Ohio EPA a closure plan for hazardous waste container storage areas No. 1 and No. 3 located at 12900 Snow Road, Parma, Ohio. A closure plan for hazardous waste container storage area No. 2 is not required and is not considered part of this approval. The closure of hazardous waste container storage area No. 2 and any appurtenances shall comply with OAC 3745-66-11 and 14, however. The closure plan was submitted pursuant to Rule 3745-66-12 of the Ohio Administrative Code (OAC) in order to demonstrate that UCAR Carbon Company, Inc.'s proposal for closure complies with the requirements of OAC Rules 3745-66-11 and 3745-66-12.

The public was given the opportunity to submit written comments regarding the closure plan of UCAR Carbon Company, Inc. in accordance with OAC Rule 3745-66-12. The public comment period extended from March 27, 1989, to May 2, 1989. No comments were received by Ohio EPA in this matter.

Based upon review of the company's submittal and subsequent revisions, I conclude that the closure plan for the hazardous waste facility at UCAR Carbon Company, Inc. does not meet the performance standard contained in OAC Rule 3745-66-11 and does not comply with the pertinent parts of OAC Rule 3745-66-12.

The closure plan submitted to Ohio EPA by UCAR Carbon Company, Inc. is hereby disapproved (see Attachment A).

You are notified that this action of the Director is issued as a proposed action pursuant to ORC Section 3745.07. This action will become final on the effective date indicated unless you or an objector files an appeal requesting an adjudication hearing within thirty (30) days of the date of issuance of this action. The adjudication hearing will be conducted in accordance with OAC Chapter 3745-47. The request for a hearing shall specify the issues of fact and law to be contested. Requests for hearings shall be sent to: Ohio Environmental Protection Agency, Hearing Clerk, 1800 WaterMark Drive, P.O. Box 1049, Columbus, OH 43266-0149.

A modified closure plan addressing the deficiencies enumerated in Attachment A must be submitted to the Director of the Ohio EPA for approval within thirty (30) days of the receipt of this letter in accordance with OAC 3745-66-12. The modified closure plan should be submitted to: Ohio Environmental Protection Agency, Division of Solid and Hazardous Waste Management, Attn: Thomas Crepeau, Manager, Data Management Section, P.O. Box 1049, Columbus, Ohio 43266-0149. A copy should also be sent to: Greg Taylor, Ohio EPA, Northeast District Office, 2110 E. Aurora Road, Twinsburg, Ohio 44087.

Sincerely,



Richard L. Shank, Ph.D.
Director

RLS/PV/ps

cc: DSHWM Central File, Ohio EPA
Lisa Pierard, USEPA, Region V
Greg Taylor, NEDO, Ohio EPA
Paul Vandermeer, DSHWM, CO, Ohio EPA
Joel Morbito, USEPA, Region V

1933U

ATTACHMENT A

Union Carbide (UCAR Carbon Co.)
OHD003926748

1. Drawings of storage units to be closed must be more specific, a bar scale or inclusion of exact dimensions on the sketch is recommended. Container storage area #1 is improperly located in Figure #2, the area is further to the south.
2. In Appendix A the facility indicates that chlorinated and nitrated organics will be analyzed, UCAR shall specify which constituents will be analyzed and the analytical methods to be used. Analytical methods from USEPA Publication SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition" shall be used.
3. A review of the annual generator reports indicates that the following chemicals should be added to the list of constituents to be analyzed: trichloroethylene, methylene chloride, dichloromethane, toluene and xylene. The annual generator reports also indicate that corrosives have been managed as hazardous wastes; therefore, the facility is to include pH testing of soil and rinseate samples.
4. The facility is to determine what analytical methods are to be used in analyzing the following constituents: quinoline, dimethyl sulfoxide, dichloromethane, trichloroethylene and furfural.
5. The wipe method of sampling is unacceptable. It is recommended that the final rinseate be collected from the concrete surface and analyzed for the appropriate constituents.
6. Rinseates will be considered hazardous if parameter levels exceed the public drinking water maximum contaminant level (MCL) for hazardous waste constituents as promulgated in 40 CFR 141.11 and OAC 3745-81-11 for inorganics and 40 CFR 141.12 and OAC 3745-81-12 for organics. If an MCL is not available, then the maximum contaminant level goal (MCLG) as promulgated in 40 CFR 141.50 shall be used. If neither an MCL nor an MCLG is available, 1 mg/l shall be used. If the MCL or MCLG is less than the contaminant's analytical detection limit using methods found in USEPA Publication SW-846, the SW-846 analytical detection limit shall be used as the clean standard.
7. Soil samples are not to be composited for analysis. Samples from each grid shall be analyzed individually.
8. The facility must indicate the proper EPA waste codes for the hazardous wastes generated.

9. Soils containing RCRA-regulated compounds or elements not naturally occurring in soils in the area of the hazardous waste management unit shall be considered to be contaminated if these compounds or elements are present above analytical detection limits. Therefore, there is no need to analyze background soil samples for synthetic organic compounds.
10. The rinseate collected from the storage area #3 shall be analyzed for mercury and lead since these materials have been stored in this area.
11. Within sixty (60) days after closure is completed, the facility must submit the owner/operator certification statement to the Director of Ohio EPA. UCAR's certification statement must include the exact wording found in OAC 3745-50-42(D).
12. Rinseate from decontamination of the drum storage areas that are not considered to be hazardous wastes may be discharged to the Regional Wastewater Treatment System only if allowable under applicable pretreatment standards within the Clean Water Act.
13. The facility must indicate what the facility's status will be after completion of closure.
14. The closure schedule shall begin with the date of Director's approval as Day 0.

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State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

Richard F. Celeste
Governor

March 9, 1989

Re: Union Carbide
U.S. EPA ID No.: OHD003926748
Ohio Permit No.: 02-18-0104
Closure Plan

Union Carbide
Attn: D. A. Mieskowski
P.O. Box 6116
Cleveland, Ohio 44101

Dear Sir:

A public notice acknowledging the Ohio EPA's receipt of a closure plan for Union Carbide located at 12900 Snow Road, Parma, Ohio will appear the week of March 13, 1989, in the Plain Dealer, Cleveland, Ohio. The Director of the Ohio EPA will act upon the closure plan request following the close of the public comment period, April 20, 1989.

Copies of the closure plan will be available for public review at the Cuyahoga County Public Library, 4510 Memphis Avenue, Cleveland, Ohio 44144 and the Ohio EPA, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Please contact me at (614) 644-2934, if you have any questions concerning this matter.

Very truly yours,

Thomas E. Crepeau, Manager
Data Management Section
Division of Solid & Hazardous Waste Management

TEC/dhs

cc: Lisa Pierard, U.S. EPA, Region V
Randy Meyer, Ohio EPA, DSHWM, TA&ES
Debbie Berg, Ohio EPA, DSHWM, NEDO

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MAR 14 1989
RCRA-IMS
U.S. EPA, REGION V

PUBLIC NOTICE

Cuyahoga County

RECEIPT OF HAZARDOUS WASTE CLOSURE PLAN

For: Union Carbide, 12900 Snow Road, Parma, Ohio, U.S. EPA ID No.: OHD003926748, Ohio Permit No.: 02-18-0104. Pursuant to OAC Rule 3745-66-10 thru 17 and 40 CFR, Subpart G, 265.110 thru 117, the Ohio Environmental Protection Agency (Ohio EPA) is hereby giving notice of the receipt of a Hazardous Waste Facility Closure Plan for a storage container area for the above referenced facility. Ohio EPA is also giving notice that this facility is subject to a determination concerning corrective action, a requirement under the Hazardous and Solid Waste Amendments of 1984, which concerns any possible uncorrected releases of hazardous waste or hazardous constituents to the environment from any current or previous solid waste management units at the above facility. A corrective action determination is required from hazardous waste facilities intending to close.

Copies of the facility's Closure Plan will be available for public review at the Cuyahoga County Public Library, 4510 Memphis Avenue, Cleveland, Ohio 44144 and the Ohio EPA, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087. Comments concerning the Closure Plan or factual information concerning any releases of hazardous waste or hazardous waste constituents by the above facility requiring corrective action should be submitted within 30 days of this notice to: Ohio Environmental Protection Agency, Div. of Solid & Hazardous Waste Mgmt., Data Management Section, Attn: Thomas E. Crepeau, Box 1049, Columbus, Ohio 43266-0149.



UCAR CARBON COMPANY INC.
LAW DEPARTMENT

39 OLD RIDGEBURY ROAD, DANBURY, CT 06817-0001
PHONE: (203) 794-2513

November 15, 1991

VIA CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Director
Ohio Environmental Protection Agency
RCRA Enforcement Section
Division of Solid & Hazardous Waste Management
P.O. Box 1049
1800 WaterMark Drive
Columbus, OH 43266-0149

Re: UCAR Carbon Company Inc., Parma OH

Gentlemen:

Pursuant to Rule 3745-55-43(A), UCAR Carbon Company Inc. has set up a trust fund to establish financial assurance for the closure of certain hazardous waste container storage areas located at its facility in Parma, Ohio. (See June 4, 1991 letter to Ohio EPA enclosing a copy of the trust agreement; attached hereto as Exhibit A.) At the time of the establishment of the trust fund, the closure cost estimate for the Parma facility was \$4,000.

UCAR Carbon Company Inc. has now received the attached letter (Exhibit B) from Ohio EPA stating that the hazardous waste container storage areas have been closed in accordance with the approved closure plan and Rules 3745-66-12 through 3745-66-15 of the Ohio Administrative Code. Accordingly, pursuant to Rule 3745-55-43(A)(7), because the value of the trust fund is greater than the total amount of the current closure cost estimate, we would ask that you direct the Trustee to release to UCAR Carbon the amount of \$4,000, which represents the amount in excess of the current closure cost estimate.

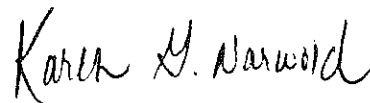
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NOV 19 1991

U. S. EPA REGION 5
OFFICE OF REGIONAL ADMINISTRATOR

Thank you for your assistance in this matter. If you have any questions regarding this request, please do not hesitate to contact me at the above telephone number.

Very truly yours,

A handwritten signature in cursive script that reads "Karen G. Narwold".

Karen G. Narwold

cc: Regional Administrator
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

bcc: V. Vesel
R. Hewson

A.4.4



UCAR CARBON COMPANY INC.

12900 SNOW ROAD, PARMA, OHIO

AREA CODE: 216 676-2000

MAIL ADDRESS: P.O. BOX 6116, CLEVELAND, OH 44101

Parma Technical Center

March 3, 1989

U. S. EPA - Region V
Attn: Ms. Lisa Pierard
RCRA Activities
Part B Application
Chicago, IL 60690-3587

Dear Ms. Pierard:

Please find enclosed your copy of our closure plan for container storage areas as required by Ohio EPA. The plan was required by our plans to install safety storage buildings on our existing interim status storage sites. This change is explained in our Part B Application and has been classified as a revision by Ohio EPA.

If you have any questions, please contact me at (216) 676-2228.

Sincerely,

D. A. Mieskowski
Manager; Health, Safety,
and Environmental Protection

DAM/dml/1838v

Enclosure

RECEIVED
MAR 07 1989

RCRA-IMS
U.S. EPA, REGION V

COPY 2

495-7

CLOSURE PLAN
FOR
CONTAINER STORAGE AREAS

UNION CARBIDE CORPORATION
UCAR CARBON COMPANY INC.

PARMA TECHNICAL CENTER
PARMA, OHIO

MARCH 1989

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CLOSURE PLAN FOR CONTAINER STORAGE AREAS

UNION CARBIDE CORPORATION
UCAR CARBON COMPANY INC.
PARMA TECHNICAL CENTER
PARMA, OHIO

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SECTION I

INTRODUCTION

I. INTRODUCTION

The UCAR Carbon Company (UCC) Inc. Parma Technical Center is located at 12900 Snow Road, Parma, Ohio. This facility includes research and development laboratories, a pilot plant used for investigating all phases of carbon processes, and customer technical/engineering services. Sales and marketing are also conducted at this location.

This site consists of approximately 334,200 square feet of surface area, including the first floor (ground level) of the six (6) main buildings on-site. The perimeter around this location has a six-foot chain-link fence (barbed-wire topped) and is patrolled by security guards during off hours each day. All of the areas addressed in this closure plan are within the perimeter of the fencing. Access to the site is limited to UCC personnel and authorized visitors/contractors.

Please refer to the enclosed Cuyahoga County topographic map (between coordinates N 55/56000 and E 63/64000) for the location of the facility.

These storage areas have been in use at this facility since approximately August 1980. There are no off-site operations shipping hazardous wastes to this facility, nor are there any hazardous waste tank systems, surface impoundments, piles, land treatment, landfills, incinerators, or miscellaneous units in operation at this site. Only container storage of hazardous waste is in use in three (3) separate, segregated areas.

This closure plan is submitted in accordance with the requirements of the State of Ohio Environmental Protection Agency Regulations 3745-66-11 through 3745-66-15 and 3745-66-70 through 3745-66-77 and Federal Regulations 40 CFR 265.110 through 265.115 and 40 CFR 265.170 through 265.177. The plan addresses the decontamination of the following facilities as shown in Figure 1 (see Section XII - Figures):

A. Container Storage Area No. 1 - outside drum storage;

B. Container Accumulation Area No. 2 - waste (auxiliary) accumulation area;

C. Container Storage Area No. 3 - inside container storage (Room 10B).

These areas are used to store or accumulate hazardous waste in drums and smaller containers. Please refer to Section V of this Closure Plan for further information and details regarding these areas.

This closure plan identifies the steps that will be necessary to decontaminate the areas where hazardous waste activities were performed and presents a step-by-step procedure for the closure of Container Storage Area No. 1, Container Accumulation Area No. 2, and Container Storage Area No. 3. Figure 1 presents the approximate locations of all hazardous waste units referred to in this closure plan.

All hazardous wastes will be removed from the areas and sent for off-site disposal at EPA-approved disposal facilities or stored in other areas before closure of the sites. Under these conditions, a postclosure plan is not required.

UCAR Carbon Company Inc. will maintain an on-site copy of the approved closure plan and perform necessary revisions to these documents. This information will be maintained until the certification of closure completeness has been submitted and approved by Ohio EPA and U.S. EPA, Region V. UCAR Carbon Company will notify the Ohio EPA and the U.S. EPA, Region V, at least 45 days prior to the date that final closure is expected to begin. Upon completion of final closure, a certificate will be submitted to the Ohio EPA. This certification, signed by UCAR Carbon Company Inc. and acknowledged by an independent registered professional engineer, will state that the facility has been closed in accordance with the specifications contained in the approved closure plan.

SECTION II

PERFORMANCE STANDARD

II. CLOSURE PERFORMANCE STANDARD

The Closure Plan is submitted in accordance with the requirements of 40 CFR 265.111 and OAC 3745-66-11.

Removal of all hazardous wastes and subsequent decontamination of the container storage areas will ensure that, after closure, these storage facilities will not require further maintenance. After decontamination, new facilities will be used to store hazardous wastes in containers. These new facilities will be entirely new structures for drum storage outside of the building and an upgraded (inside the building) container storage room (Room 10B).

This closure plan was designed to ensure that the facility minimizes or eliminates threats to human health and the environment and avoids escape of hazardous waste, hazardous waste constituents, leachates, contaminated rainfall, or water decomposition products to the ground or surface waters or to the atmosphere. If there is evidence of any spills or leaks during closure, samples will be taken and analyzed to determine the extent of contamination in the soil and, if necessary, in water sources. Any contaminated soil will be excavated, removed, and disposed of at a proper disposal facility; alternatively, if the volume of contaminated soil is significant, some other remedial action (e.g., vapor extraction) may be employed. Any contaminated water sources will be treated and/or disposed of properly. The entire site will be regraded, if necessary, to prevent erosion.

The performance standards for determining if the sites have been or are contaminated shall be:

Container Storage Area No. 1

| | |
|---------------|--|
| Core Sampling | 10 mg/kg or 2 standard deviation from background |
|---------------|--|

Container Accumulation Area No. 2

| | |
|---------------|---|
| Wipe Sampling | 100 ug/100 cm ² |
| Core Sampling | 10 ug/kg or 2 standard deviations from background |

Container Storage Area No. 3 (Room 10B)

| | |
|---------------|----------------------------|
| Wipe Sampling | 100 ug/100 cm ² |
|---------------|----------------------------|

Soils in the area of the UCC Parma Technical Center generally consist of glacial till and clay. The soil is usually resistant to liquid penetration. It is extremely unlikely that groundwater could be affected by a release at the facility, if one has occurred. If soil sampling establishes that contamination extends to a significant depth in the soil, UCC will address groundwater testing to determine if contamination has spread to that media.

SECTION III

FINAL CLOSURE ACTIVITIES

III. FINAL CLOSURE ACTIVITIES

Final closure activities are submitted in accordance with the requirements of 40 CFR 265.112 and OAC 3745-66-12.

A. Notification

The EPA Regional Administrator shall be notified at least 45 days prior to the date on which final closure of the container storage areas begin. UCC expects these areas to be closed during 1989.

B. Temporary Storage

During the final closure of the storage and accumulation areas, hazardous wastes stored therein or generated during the closure will either be sent off-site for immediate disposal (preferred) or moved into "temporary" storage at the facility.

Since there are three separate areas, the wastes may be moved from the area being cleaned into one of the other two areas. Alternatively, an inside location may be chosen to be set up as temporary storage. This will consist of two layers of 6-mil polyethylene sheeting on the floor, with adequate diking around the perimeter to contain possible discharges. The area will be cordoned off and signs will be erected to warn personnel about the presence of hazardous waste.

Notification will be given to forklift drivers and all personnel about any temporary storage site, its location, and precautions to be exercised in its area and use.

C. Closure Description

The final closure of the container storage areas will begin with the removal and proper disposal of any remaining containerized hazardous waste and decontamination of all surfaces, equipment, and

structures that may have become contaminated during the use of the areas. Soils contaminated by hazardous wastes will be excavated, containerized, and removed from the site for proper disposal. During the final closure, all contaminated materials and wastes will be handled as a hazardous waste in accordance with all applicable requirements of 40 CFR 262, EPA Regulation for Hazardous Waste Generators.

D. Closure Time

Within 30 days after starting, closure of these areas will be completed. All hazardous waste developed from decontamination of these areas will be removed and disposed of properly within 30 days after completing closure.

E. Certification of Closure

Within 60 days after the completion of the final closure of the container storage areas, a certification that the container storage areas have been closed in accordance with the specifications of this plan will be sent by registered mail to the U.S. EPA Regional Administrator and the Ohio EPA. This certification will be signed by UCC and by an independent registered professional engineer.

SECTION IV

WASTE CHARACTERISTICS

IV. WASTE CHARACTERISTICS

Waste characteristics are submitted in accordance with the requirements of 40 CFR 265.112 and OAC 3745-66-12.

A. Types of Waste

All wastes must be evaluated by the generator to determine the appropriate method of disposal. This is accomplished by consulting the MSDS, the Safety/Health Procedures Manual, and the laboratory's Job Safety Analysis (JSA). All waste generated at this facility will fall into one of the seven following categories.

1. Waste Oils: Pump oil, hydraulic fluid, heat transfer oil, and miscellaneous petroleum oils.
2. Semisolid Tars/Pitches: Materials (tars/pitches) that are not solid at ambient temperature.
3. Waste Solvents: All solvents appearing on the list "Chemicals Approved for Collection in Waste Solvent Drum" (Table I).
4. Solid Inert Waste: Solid products of an inert nature, including tars, pitches, and resins that are solid at ambient temperature, but excluding asbestos waste.
5. Laboratory Managed Wastes: Small quantities of chemicals for which the MSDS indicates a methodology for laboratory management of the waste. Chemicals appearing on the list "Inorganic Chemicals that are Drain Disposable" (Table II).
6. Other: Asbestos and any other known chemical not in one of the categories above.
7. Unknowns: Chemicals in containers with no label or of unknown contents.

TABLE I

CHEMICALS APPROVED FOR COLLECTION IN WASTE SOLVENT DRUM

| | |
|----------------------|--------------------------|
| Acenaphthene | iso-Butyl alcohol |
| Acetamide | n-Butyl alcohol |
| Acetaldehyde | sec-Butyl alcohol |
| Acetone | tert-Butyl alcohol |
| Acrolein | Butyl amine |
| Acrolein dimer | iso-Butyl amine |
| Allyl acetate | tert-Butyl amine |
| Allyl alcohol | Butyl amine |
| 2-aminopyridine | Butyl cellosolve |
| iso-Amyl acetate | iso-Butyl formate |
| sec-Amyl alcohol | iso-Butyl methyl |
| n-Amyl-alcohol | ketone |
| tert-Amyl alcohol | p-tert-Butyl toluene |
| Amyl amine | Butyraldehyde |
| Amylene | 2-Butyrolacetone |
| iso-Amyl formate | |
| Aniline | Camphor |
| o-Anisaldehyde | Carbon disulfide |
| Anisidines | Cellosolve |
| Anthracene | Cellosolve acetate |
| Auramine | Chloroacetaldehyde |
| Aziridine | Chloroanilines |
| | Chlorobenzene |
| 1,2,-Benzanthracene | Chloronaphthalene |
| Benzene | Cinnamaldehyde |
| Benzaldehyde | Crotonaldehyde |
| Benzyl acetate | Cumene |
| Benzyl alcohol | Cycloheptanone |
| Benzyl amine | Cyclohexylamine |
| Benzyl benzoate | Cyclohexane |
| Biphenyl | Cyclohexanol |
| N-4-biphenyl | Cyclohexanone |
| acetohydroxamic acid | Cyclohexene |
| 2-biphenyl amine | Cyclopentane |
| Benzyl alcohol | Cyclopentanone |
| Borneol | Cyclopropane |
| Bromobenzene | |
| iso-Butane | Decahydronaphthalene |
| n-Butane | iso-Decaldehyde |
| 1-Butene | n-Decane |
| 2-Butene | n-Decyl alcohol |
| iso-Butyl acetate | Diacetone alcohol |
| n-Butyl acetate | 1,2,5,6-Dibenzanthracene |
| sec-Butyl acetate | 3,4,5,6-Dibenzcarbazole |
| tert-Butyl acetate | 1,2,5,6-Dibenzofluorene |

1,2,3,4-Dibenzophenanthrene
 3,4,8,9-Dibenzpyrene
 Dibenzyl amine
 Dibutyl amine
 Dibutyl oxalate
 Dibutyl phthalate
 Dicyclopentadiene
 Diethanolamine
 Diethyl adipate
 Diethylamine
 N,N-diethyl aniline
 Diethyl carbonate
 Diethylene glycol
 Diethylenetriamine
 Diethyl ketone
 Diethyl malonate
 Diethyl phthalate
 3,4-Dihydropyran
 Diisobutyl ketone
 Diisopropylamine
 3,3'-dimethoxy benzidine
 Dimethylamine
 N,N-dimethyl aniline
 2,2-Dimethyl butane
 Dimethyl carbonate
 1,2-Dimethyl chrysene
 Dimethyl formamide (DMF)
 Dimethyl fumarate
 Dimethyl naphthalene
 Dimethyl propane
 Dimethyl phthalate
 Di-n-octyl phthalate
 Di-sec-octyl phthalate
 Dipentene monoxide
 Diphenyl amine
 Diphenyl methane
 Dodecane

Ethanol
 Ethanolamine
 Ethyl acetate
 Ethyl acetoacetate
 Ethyl alcohol
 Ethylamine
 Ethyl-sec-amyl ketone
 N-Ethyl aniline
 Ethyl benzene
 Ethyl benzoate
 Ethyl butyl ketone
 Ethyl butyrate
 Ethyl crotonate
 Ethylene diamine
 Ethylene glycol
 Ethyl formate

2-Ethyl hexanol
 Ethyl lactate
 Ethyl morpholine
 Ethyl oxalate
 2-Ethyl-3-propylacrolein
 Ethyl silicate

Formaldehyde
 Formalin (MeOH free)
 Formamide
 Furfural
 Furfuryl alcohol

Glutaraldehyde
 Glycerol
 Glyoxal

Heptane
 n-Heptylamine
 Hexane
 n-Hexanol
 1-Hexene
 2-Hexene
 sec-Hexyl acetate
 p-Hydroquinone
 Hydroxylamine

Lacquer diluent
 Ligroin

Methyl acetate
 Methyl alcohol (Methanol)
 Methyl amyl alcohol
 Methyl-n-amyl ketone
 6 Methyl-1,2-benzanthracene
 10 Methyl-1,2-benzanthracene
 Methyl benzoate
 Methyl benzyl alcohol
 2-Methyl-1-butene
 2-Methyl-2-butene
 3-Methyl-1-butene
 Methyl butyl ketone
 Methyl butyrate
 Methyl cellosolve
 Methyl cellosolve acetate
 Methyl cyclohexane
 2-Methyl cyclohexanol
 2-Methyl cyclohexanone
 4-Methyl cyclohexene
 Methyl ethyl ketone (MEK)
 Methyl formate
 2-Methyl furan
 Methyl isobutyl ketone
 (MIBK)

Methyl isobutyrate
 Methyl isocyanate
 1-Methyl naphthalene
 1-Methyl-2-naphthylamine
 Methyl-n-propyl ketone
 Methyl salicylate
 Methyl styrenes
 Methyl-toluene sulfonate
 Morpholine

 Naphthas
 Naphthalene
 1-Naphthol
 2-Naphthol
 1-Naphthylamine
 2-Naphthylamine
 Nicotine

 1-Octanol
 2-Octanol

 Paraffin
 n-Pentane
 iso-Pentane
 1,5-Pentanediol
 2,4-Pentanedione
 2-Pentanol
 Petroleum ether
 Phenanthrene
 Phenyl acetate
 p-Phenylenediamine
 Phenylethanolamine
 Phenyl isocyanate
 Phenyl-2-naphthylamine
 Phorone
 iso-Phorone
 Picolines
 Polyvinyl acetate emulsion
 1,2-Propanediol
 Propargyl alcohol
 iso-Propenyl acetate
 iso-Propyl acetate
 n-Propyl acetate
 iso-Propyl alcohol
 n-Propyl alcohol (propanol)
 Propyl benzene
 iso-Propyl benzoate
 Propylene carbonate
 Propyl formate
 iso-Propyl formate
 Pyridine

 Quinaldine
 Quinoline

8-Quinolinol

 Stoddard solvent
 Styrene

 Tallow
 Terphenyls
 Tetradecane
 Tetrahydronaphthalene
 1-Tetralone
 Toulene
 Toluidines
 Triamylamine
 Tri-n-butylamine
 Triethanolamine
 Tri-ethylamine
 Triethylene glycol
 Triethylene tetramine
 Triethyl-ortho-formate
 Trimethylamine
 5,9,10-Trimethyl-1,2-benzanthracene
 6,9,10-Trimethyl-1,2-benzanthracene
 2,2,4-Trimethyl pentane
 2,4,4-Trimethyl-2-pentane
 1,3,5-Trioxane
 Tripropylamine
 Turpentine

 Varnish
 Vinyl acetate

 Warfarin

 Xylenes
 Xylenols
 Xylidines

December 1986
 Rev. 07/27/87
 Rev. 03/01/88

TABLE II
 INORGANIC CHEMICALS THAT MAY BE DISPOSED IN DRAIN

| <u>Cation</u> | <u>Precipitate</u> | <u>Anion</u> | <u>Drain Disposal</u> |
|---------------|--------------------|--------------|--|
| Aluminum | OH ⁻ | Bisulfate | Soluble in water; rinse with at least 100 parts of water per part of chemical |
| Ammonium | | Borate | |
| Calcium | OH ⁻ | Bromide | |
| Copper | OH ⁻ | Carbonate | |
| Iron | OH ⁻ | Chloride | |
| Magnesium | OH ⁻ | Cyanate | |
| Molybdenum | Calcium Tungstate | Hydroxide | |
| Potassium | | Iodide | |
| Sodium | | Oxide | |
| Titanium | OH ⁻ | Phosphate | |
| Zinc | OH ⁻ | Sulfate | |
| Zirconium | OH ⁻ | Sulfite | |
| | | Thiocyanate | |

TYPICAL NONHAZARDOUS LABORATORY WASTES

Organic Chemicals:

Sugars and sugar alcohol
 Starch
 Alpha-amino acids and salts
 Citric and Lactic acids
 Ammonium and na, K, Mg, Ca salts

Inorganic Chemicals:

Sulfates
 Phosphates
 Carbonates
 Oxides
 Chlorides
 Fluorides
 Borates

References:

Laboratory Waste Disposal Manual, 1972. Manufacturing Chemists Association, Washington, D.C. (T.I.S.: HD726M31).

B. Waste Analysis

The UCC Parma Technical Center hazardous waste generation includes mixed solvents, commercial chemicals, waste oils, solid/semisolid tars, and pitches. Hazard characteristic designations are derived from labels, test methods, and parameters as described in Title 40 of the U.S. Code of Federal Regulations.

The composition of most wastes is clearly known because the materials are used in a laboratory or pilot plant setting and there is strict control of materials entering the locked storage areas. Known wastes from these areas are placed into separate containers with the appropriate labels for disposal; analyses are not performed on these wastes, since their compositions are known.

On rare occasions, an unknown material is found in one of the hazardous waste storage areas. When this occurs, an inquiry is made throughout the facility to ascertain its origin and contents. If this is unsuccessful, a complete analysis of the material is performed in accordance with 40 CFR 262.

SECTION V

CLOSURE PLAN

V. CLOSURE PLAN

The closure plan is submitted in accordance with the requirements of 40 CFR 265.112 and OAC 3745-66-12.

A. Closure of Container Storage Area No. 1

Container Storage Area No. 1 is located at the (drum storage) RCRA regulated material area, located directly west of Building No. 6 (pilot plant), as seen in Figure No. 1. It is the "final" storage area prior to off-site removal of filled hazardous waste drums.

This 16' x 16' area is marked by white lines and is a continuation of the asphalt drive that runs along the side of the building. This open area can accommodate a maximum of fifty 55-gallon drums.

As part of this closure, the asphalt area outlined by the white lines will be broken up, removed, and disposed of as hazardous waste. Loose fill or foundation material will be included in this removal. Soils to the west of the storage area will be tested for contamination, as described in the soil investigation plan. If contamination is found, remedial measures (soil excavation/disposal or vapor extraction) will be initiated.

1. Maximum Waste Inventory

- a. Maximum quantity in storage: 2,750 gallons.
- b. Maximum quantity being treated: not applicable; there is no treatment of hazardous waste(s) at this facility.

2. Sampling Plan and Decontamination

- a. Sampling for potential releases of hazardous wastes in this area is complicated. The asphalt pad is permeable to many of the solvents stored in the area. Also, the asphalt itself may contain (as raw materials) some of the chemicals stored at the site. It is possible, therefore, that a single compound found underneath the asphalt pad could have originated from a waste release or from the installation of the asphalt.
- b. After the asphalt has been removed, core soil samples will be taken from the area formerly covered by the asphalt. This will be done by using a grid pattern at the site (see sampling diagram, Figure 2, in Section XII). Background core samples will also be taken from four (or more) locations under the asphalt and away from the hazardous waste storage area. All analyses will be by Methods 8240 and 8270. The core samples will be taken to 6-inch depth in all cases and each sample will be composited for analysis. The storage area core sample results will be compared to the background analyses (plus two standard deviations). If the results are similar, the storage area soil under the asphalt will be declared uncontaminated. If the analyses are higher for storage area locations, new samples will be obtained from the affected locations in the 6-inch to 12-inch depth. If these demonstrate clean soil, sampling will cease. Otherwise, sampling will continue in 6-inch increments until uncontaminated soil is reported. UCC will place contaminated soil (if any is found) in drums for disposal as a hazardous waste.

- c. Since this storage area is sloped to allow runoff to the west side, the sampling grid pattern will be extended to this side of the pad for a distance of 8 feet. Sampling, analysis, and contamination determination will be continued as above.

3. Material Storage and Handling

Before any sampling or cleaning is begun, all hazardous wastes will be removed from the site and placed in another permanent or temporary hazardous waste storage area. The drums will be moved by securing them on a pallet (no more than 4 drums per pallet), then carrying the pallet by forklift to its destination. Hazardous waste storage buildings exist elsewhere on the site (Container Accumulation Area No. 2 and inside Container Storage Area No. 3). A temporary storage area might consist of stationary blocks or planks forming a perimeter that is lined with 6-mil polyethylene.

4. Equipment Decontamination

Equipment used during sampling, waste removal, and decontamination procedures that has become contaminated with hazardous wastes will be cleaned before being transferred to another site. Cleaning will be with soap and water. All materials generated during decontamination will be collected for disposal.

5. Waste Disposal

Contaminated soils, water, asphalt, and miscellaneous items will be collected and sent for off-site disposal as hazardous waste.

B. Closure of Container Accumulation Area No. 2

Container Accumulation Area No. 2 is located outside of the shipping and receiving area, north of the services building. Drums of hazardous waste, which are not yet filled to capacity, are kept in this area; no drums of hazardous waste are stored in this area for more than 90 days. Thus, this building is not a hazardous waste storage facility, but is included in the closure plan since it will no longer be used in the future.

This 5' x 9' metal building is located on a concrete pad of the same size and can accommodate approximately ten 55-gallon drums.

As part of this closure, the concrete pad area under the building structure and surrounding soil area will be evaluated. This will include a 2-foot boundary area beyond the concrete pad in all directions.

1. Maximum Waste Inventory

- a. Maximum quantity in storage: 550 gallons.
- b. Maximum quantity being treated: not applicable; there is no treatment of hazardous waste(s) at this facility.

2. Waste Removal

Before any activity begins at this accumulation area, the drums containing hazardous and nonhazardous wastes will be thoroughly inspected for correct identification of contents and labeling and to ensure that the drums are sturdy and show no signs of deterioration. The drums will be examined for leaks, bulging heads or ends, leaking closures, and dents. Any drum that is not in good condition will have its contents transferred into an acceptable drum. Once it has been determined that all drums are in good condition, UCC personnel

will transfer the drums by forklift to a permanent or temporary storage area as described in Section A above. The drums will be transferred on pallets; no more than 4 drums will be on any one pallet.

3. Initial Wash-down Procedure

- a. The concrete pad will undergo an initial wash-down to remove debris. The wash-down will be performed using soap, a surfactant, and water. Two rinses with water only will follow the washing procedure. Temporary dikes will be erected around the perimeter of the concrete pad to prevent the release of the wash water to the soil.
- b. Brushes and brooms will be used in the washing procedure. Wash water and debris will be collected by vacuum and sent for off-site disposal as a hazardous waste. Any temporary diking that cannot be decontaminated will be collected in drums and disposed of as hazardous waste.

4. Sampling Plan

- a. Sampling will be performed to determine if contamination exists on the concrete pad and in the soil up to approximately 2 feet from the pad. See Figure 3 in Section XII. (If soil contamination is found, the soil sampling will be expended until the limit of contamination is determined.) The concrete pad will be wipe-sampled to determine the quantity of hazardous wastes that may be present.
- b. Wipe samples will be taken by soaking a piece of clean fiberglass filter paper, cotton swab, or cotton gauze in methylene chloride, then wiping a 100 cm² area of the pad. The sample will be placed in a clean glass jar and sealed (screw-top with Teflon or aluminum liner) for transport. The samples will be extracted using Method 3540 and

analyzed using Methods 8240 and 8270. A grid pattern will be established to sample the concrete pad (see attached drawing). Analysis of greater than 100 micrograms of hazardous waste on the wipe shall be considered evidence of contamination.

- c. The grid pattern will be extended to determine where soil samples will be obtained from around the concrete pad. Core samples will initially be taken in the top 6 inches of soil and each sample will be composited for analysis. Analyses shall be by Methods 8240 and 8270. If a core analysis indicates greater than 10 micrograms per kilogram, then background samples taken from a nonhazardous waste area nearby may be used for comparison. Four or more background samples may be obtained. If the core samples taken from the hazardous waste area show concentrations of contaminants in excess of background levels (plus two standard deviations), the core sample area shall be declared contaminated. Otherwise, it shall be determined to be uncontaminated.
- d. If contaminated soil is found, new core samples shall be obtained from the hazardous waste area at a depth of 6 to 12 inches. If these indicate clean soil, sampling will cease. Otherwise, sampling shall continue in 6-inch increments until uncontaminated soil is reported.

5. Decontamination

- a. The initial wash-down water, rinses, and contaminated soils will be placed in drums, sealed, and prepared for disposal as a hazardous waste. If additional cleaning of the concrete pad is needed because of contamination, this cleaning shall be performed using soap, surfactant, and water. Methylene chloride may be used sparingly, if necessary, during decontamination. Waste materials,

including wastewater and/or solvent (collected by vacuum), temporary diking materials, and disposable equipment, shall be placed in drums for disposal as hazardous wastes.

- b. Contaminated soils will not be cleaned but rather be excavated and removed off-site (in drums) for disposal. Clean fill will be used for regrading if soil is removed.
- c. Equipment that can be decontaminated will be cleaned using water or solvent. Waste liquids from this procedure will be collected in drums and sent off-site for disposal as a hazardous waste.

C. Closure of Container Storage Area No. 3

The waste commercial chemical storage area (interior Room 10B) is a concrete block storage room in the shipping/receiving department. This space is used to store waste materials other than waste oils or solvents.

This 9' x 18' storage area has a concrete floor, a steel entry door, and can accommodate approximately thirty-eight 55-gallon drums.

As part of this closure, the area inside the block wall structure and the steel entry door will be decontaminated.

1. Maximum Waste Inventory

- a. Maximum quantity in storage: 500 gallons.
- b. Maximum quantity being treated: not applicable; there is no treatment of hazardous waste(s) at this facility.

2. Waste Removal

Before any activity begins at this storage area, the containers holding hazardous and nonhazardous wastes will be thoroughly inspected for correct identification of contents and labeling and to ensure that they are sturdy and show no signs of deterioration. The containers will be examined for leaks, bulging heads or ends, leaking closures, and dents. Any container that is not in good condition will have its contents transferred into an acceptable container. Once it has been determined that all containers are in good condition, UCC personnel will transfer them by forklift on pallets to a permanent or temporary storage area as described in Section A above.

3. Initial Wash-down Procedure

- a. After the hazardous wastes which were stored in this area are removed, the area will be thoroughly cleaned in order to decontaminate it. The cleaning procedure will involve washing down the floor and 24 inches up the wall using soap, surfactant, and water. Storage shelves will also be cleaned with this solution. Brushes and brooms will be used in the washing procedure. Wash water and debris will be collected by vacuum and sent for off-site disposal as a hazardous waste. Any temporary diking that cannot be decontaminated will be collected in drums and disposed of as a hazardous waste.
- b. Temporary dikes will be erected at the door and at floor penetrations to prevent the escape of any liquid cleaning agents.

4. Sampling Plan

Sampling will be performed to determine if contamination exists on the floor, the lower walls, and shelving. Wipe samples will be taken by soaking a piece of clean fiberglass filter paper, cotton swab, or cotton gauze in methylene chloride, then wiping a 100 cm² area. The sample will be placed in a clean glass jar and sealed (screw-top with Teflon or aluminum liner) for transport. The samples will be extracted using Method 3540 and analyzed using Methods 8240 and 8270. A grid pattern will be established to sample the floor and lower walls (see Figure 4 in Section XII). An analysis of greater than 100 micrograms of hazardous waste on the wipe shall cause the area from which the sample was obtained to be considered contaminated.

5. Decontamination

- a. The initial wash-down water, rinses, and contaminated debris will be placed in drums, sealed, and prepared for disposal as a hazardous waste. If additional surface cleaning is needed, this cleaning shall be performed using soap, surfactant, and water. Methylene chloride may be used sparingly, if necessary, during decontamination. Waste materials, including wastewater and/or solvent (collected by vacuum), temporary diking materials, and disposable equipment shall be placed in drums for disposal as hazardous wastes.
- b. Equipment that can be decontaminated will be cleaned using water or solvent. Waste liquids from this procedure will be collected in drums and sent off-site for disposal as a hazardous waste.

D. Sample Analysis

1. Wipe samples and soil samples will be placed in glass bottles with screw-top lids. The lids will be lined with Teflon or aluminum. Samples will be extracted from the soils received via Method 3540 in EPA Pollution SW-846, Test Methods for Evaluating Solid Waste - Physical/Chemical Methods.
2. Samples shall be analyzed using Methods 8240 and 8270 in SW-846.

E. Contaminated Soil Removal (if appropriate)

1. If soil contamination is found, UCC will excavate and remove all contaminated soils. Equipment that may be used includes a backhoe, front-end loader, shovels, picks, and hoes.
2. In Container Storage Area No. 1, the maximum amount of soils that may be removed for every 6 inches of contamination is expected to be 192 cubic feet or 1,440 gallons (27 drums).
3. In Container Accumulation Area No. 2, the maximum amount of soil that may be removed for every 6 inches of contamination is expected to be 36 cubic feet or 270 gallons (5 drums).
4. All contaminated soils will be properly containerized and removed for off-site disposal as hazardous waste residues.

F. Hazardous Waste Services

UCC will contract with independent sources to provide sampling, decontamination, transportation, disposal, and certification services during this closure.

1. Transportation

UCC utilizes the following hazardous waste haulers to remove wastes from its site. These transporters will probably be used to remove any hazardous wastes in storage at the facility when closure begins or wastes generated during closure.

| <u>Transporter Name</u> | <u>RCRA ID No.</u> |
|---------------------------------|--------------------|
| Chemical Waste Management, Inc. | ILD 099202681 |
| Mac Trucking | VAD 049600323 |

2. Disposal Firms

UCC will probably utilize one of the following firms for disposal of any hazardous wastes in storage at the facility when closure begins or wastes generated during closure.

| <u>Disposal Firms</u> | <u>RCRA ID No.</u> |
|--|--------------------|
| Chemical Waste Management, Inc. Emelle, Alabama | ALD 000622464 |
| Trade Waste Incineration Sauget, Illinois | ILD 098642424 |

SECTION VI

PERSONNEL PROTECTION AND
EQUIPMENT DECONTAMINATION AREAS

VI. PERSONNEL PROTECTION AND EQUIPMENT DECONTAMINATION AREAS

The requirements associated with the Personnel Protection and Heavy Equipment Decontamination Areas are in accordance with 40 CFR 265.114 and OAC 3745-66-14.

A. Personnel Protection Area

The work involving soil sampling, possible contaminated soil removal, debris removal, and dismantling of contaminated equipment will be performed at Level D protection. The levels of protection outlined below are generally accepted for use at sites potentially containing hazardous chemicals.

Level D

Coveralls

Gloves, chemically resistant

Safety boots

Goggles or safety glasses

Hard hat

Face shields

All workers performing in Level D protection will do as follows:

1. Personnel safety equipment will be left on-site during the project. Disposable items such as coveralls and gloves will be changed at least daily.
2. Personnel will be required to wash before leaving the site for lunch, breaks, and at the end of the working day.
3. Before any reusable equipment is removed from the site, it will be decontaminated. Small items such as shovels, tape measures, and rakes will be scrubbed with detergent and rinsed with potable water.

4. During equipment washing and decontamination, face shield shall be worn for splash protection.

B. Equipment Decontamination Area (if appropriate)

1. A proposed Equipment Decontamination Area is shown as Figure 1 and can be used for the decontamination of any construction equipment that will be used. The heavy construction equipment will not pass outside the UCAR Carbon Company facility without proper decontamination procedures being implemented. The vehicles will be cleaned using water on a temporary staging pad. The contaminated wash water will be collected by vacuum and contained before being disposed of as a hazardous waste.
2. The heavy equipment decontamination area will be approximately 35' long x 25' wide. The area will be lined with two layers of 6-mil polyethylene liner. These liners may be protected from puncture by placing a geotextile fabric under them. Booms or absorbent socks will be placed around the perimeter of the enclosure to form temporary dikes. These will be placed under the polyethylene liners.
3. Wash water from decontamination will be vacuumed from the enclosure. It will be combined with any other debris (such as the liners) and sent for off-site disposal as hazardous waste.

SECTION VII

CLOSURE SCHEDULE

VII. CLOSURE SCHEDULE

The Closure Schedule is submitted in accordance with the requirements of 40 CFR 265.113 and OAC 3745-66-13. After the closure plan is accepted, UCC will begin arrangements to effect final closure of three areas. The schedule for beginning closure must be flexible to allow time for EPA approvals and contractor contingencies. This schedule starts from the time of notification to the EPA.

| <u>Activity</u> | <u>Day Number</u> |
|--|-------------------|
| A. Notification of the EPA Regional Administrator that closure activities are to begin at a given date | - 45 (min) |
| B. Contractor arrives on-site and begins to erect temporary diking, establish decontamination facilities, relocate stored wastes on-site, etc. | - 5 |
| C. Closure activity begins at one, two, or all three areas affected | 0 |
| D. Closure of Container Storage Area No. 3 complete | + 10 |
| E. Closure of Container Accumulation Area No. 2 complete | + 25 |
| F. Closure of Container Storage Area No. 1 complete | + 40 |
| G. Contractor decontamination complete | + 42 |
| H. All closure hazardous wastes removed from site | + 45 |
| I. Closure complete | + 50 |

SECTION VIII
CLOSURE CERTIFICATION

VIII. CLOSURE CERTIFICATION

The Closure Certification is submitted in accordance with the requirements of 40 CFR 265.115 and OAC 3745-66-15.

To ensure that the decontamination and closure of the facilities is completed as outlined in this closure plan, the professional engineer will be present during decontamination of all container storage areas, removal of all excavated soils, and clearance sampling. In the event the professional engineer cannot attend because of extenuating circumstances, a qualified representative who is independent of UCAR Carbon Company from the same firm will be his representative.

The following pages contain sample certifications which have been recommended by the U.S. EPA. The certification presented on Page 39 is a sample certification that would be signed by an independent professional engineer, indicating that the storage areas have been decontaminated and are considered clean.

OWNER CERTIFICATION OF CLOSURES

I, _____,

(Owner or Operator)

of _____,

(Name and Address of Facility)

hereby state and certify that, to the best of my knowledge and belief,
the _____
has been closed in accordance with the facility's closure plan, and that
closure was completed on the _____ day of _____, 19 ____.

Signature

Date

PROFESSIONAL ENGINEER CERTIFICATION OF CLOSURE

I, _____, a certified Professional Engineer hereby certify,
(Name)

to the best of my knowledge and belief, that I have verified that Professional
Engineer Closure Certificates were issued for all prior closure activities at:

(Name and Address of Facility)

for _____, and that I have made visual
(Hazardous Waste Management Unit)

inspection(s) of the aforementioned facility, and closure of the aforemen-
tioned facility has been performed in accordance with the facility's closure
plan.

Signature

Date

Professional Engineer License No.

State

Business Address

City/State/Zip Code

Business Telephone (with Area Code)

PROFESSIONAL ENGINEER CERTIFICATION OF DECONTAMINATION

I, _____, a certified Professional Engineer, hereby certify,
(Name)

to the best of my knowledge and belief, that I have verified that Professional Engineer Certificates of Clean were issued for all prior closure activities at:

(Name and Address of Facility)

for _____, and that I have made visual
(Hazardous Waste Management Unit)

inspection(s) of the aforementioned facility, and decontamination of the aforementioned facility has been performed in accordance with the decontamination procedures outlined in the facility's closure plan.

Signature

Date

Professional Engineer License No.

For State of

Business Address

City/State/Zip Code

Business Telephone (with Area Code)

SECTION IX

CLOSURE COST ESTIMATES

HAZARDOUS WASTE REGULATIONS

CLOSURE COST ESTIMATES

UCAR CARBON COMPANY INC.

Facility Parma Technical Center
Address 12900 Snow Road
Parma, Ohio 44130

EPA ID No.: OHD 003926748
Prepared by: D. A. Mieskowski
Date:
Telephone No.: (216) 676-2228

CLOSURE
COST ESTIMATES FOR CLEANUP AND
DECONTAMINATION OF OUTDOOR
DRUM STORAGE AND ACCUMULATION AREAS

| <u>Task Areas</u> | <u>Cost</u> |
|---|-------------|
| Administrative costs | \$ 7,000 |
| Removal and disposal of stored liquid waste (assuming 2,200 gallons *) | 10,000 |
| Cleaning and decontamination with solvents and/or neutralizing agents, including pads | 10,000 |
| Analytical costs to ensure cleanliness parameters are achieved: | |
| - Develop soil sampling and analysis plan for review by Ohio EPA | 3,000 |
| - Soil coring to screen for potential contamination (grid method with sampling no deeper than one foot) | 6,000 |
| - Analysis of core and wipe samples following methods in EPA SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" | 23,000 |
| - Receiving cost of contaminated soil at licensed disposal site (maximum of 64 drums) | 12,800 |
| - Clean soil cover placement | 2,500 |
| - Site vegetation and soil stabilization | 1,000 |
| Disposal of cleaning waste(s) | 7,500 |
| Removal of contaminated solid material (assuming 20 yards of material to be removed) | 6,800 |

| <u>Task Areas</u> | <u>Cost</u> |
|---|-------------------|
| Additional analytical costs incurred if extensive contamination is present | 6,000 |
| Technical review of site during remediation by registered professional engineer | 3,500 |
| Contingency costs (using 10 percent of above total) | 9,900 |
| | <u> </u> |
| TOTAL | <u>\$109,000</u> |

It is not believed any contamination could be present at the drum container storage sites that would warrant a groundwater monitoring program.

- * Based on historical data, no more than 2,200 gallons of hazardous wastes are stored at the three sites at any one time, even though the total maximum capacity of the sites exceeds this amount.

Jan 1987
Revised 02/89

CLOSURE
COST ESTIMATES FOR CLEANUP AND
DECONTAMINATION OF CHEMICAL (INDOOR)
STORAGE AREA

| <u>Task Areas</u> | <u>Cost</u> |
|---|-----------------|
| Removal and disposal of stored waste (assuming 500 gallons of material) | \$60,000 |
| Decontamination with cleaning solvents or neutralizing agents | 1,800 |
| Analysis of wipe samples to ensure storage pad is clean | 1,200 |
| Disposal of cleaning waste | 1,200 |
| | |
| TOTAL | <u>\$64,200</u> |

RCRA requirements mandate that costs assume third party perform cleanup tasks.

These closure cost estimates are based upon a third party (neither parent nor subsidiary) closing this site, and do not include any salvage value for any facility properties, equipment, or waste.

In addition, this estimate equals the cost of final closure in the life of this facility when the extent and manner of operation would make closure the most expensive.

This information is maintained at the facility.

SECTION X
POSTCLOSURE PLAN

X. POSTCLOSURE PLAN

All hazardous wastes in storage at the facility will be removed from the site and sent for disposal. Since no hazardous wastes will remain at the site in the two storage and one accumulation areas, no postclosure is required, according to 40 CFR 265.110.

SECTION XI

FINANCIAL ASSURANCE MECHANISM FOR
CLOSURE AND LIABILITY COVERAGE

XI. FINANCIAL ASSURANCE MECHANISM FOR CLOSURE AND LIABILITY COVERAGE

UCC is complying with 40 CFR 265.143(a), "Financial Assurance for Closure," through the establishment of a trust fund. The UCC trust fund will provide for the closure of several UCC hazardous waste facilities. Details of the trust fund and a copy of the trust agreement are as follows:



*Linde +
Carbon*

May 12, 1988

Director, Ohio Environmental
Protection Agency
361 East Broad Street
Columbus, OH 43215

Gentlemen:

Subject: Financial Assurance
Closure and Post-Closure
Hazardous Waste Management Facility

Attached are the revised Schedules A and B for the Trust Agreement dated as of April 30, 1987, between Union Carbide Corporation, the Grantor, and Chemical Bank, the Trustee.

Very truly yours,

CA

Carolyn A. O'Boyle

CAO'B:kbc

Attachments

Blind Copy to: */* Jim Petros, P2609

0066B:36

6584

UNION CARBIDE CORPORATION
CHEMICALS & PLASTICS GROUP
HEALTH, SAFETY & ENVIRONMENTAL AFFAIRS

P-2

39 OLD RIDGEBURY ROAD
DANBURY, CT 06817-0001

RECEIVED

JUL 21 1988

HS & FA

TO: L. E. Barron - Linde
H. T. Prosser Carbon Products

DATE: July 18, 1988

SUBJECT: 1988 Financial
Assurance Demonstrations

Larry and Terry-

Attached are copies of the updated RCRA Trust fund submissions which were submitted earlier this year for your facilities.

Be sure you let Carolyn O'Boyle and I know of any changes in these numbers.

Sincerely,

JK Petros
J. K. Petros

JKP/bd
Attachment
1774H

SCHEDULE A

Union Carbide Corporation - Lakewood Plant

EPA ID No. OHO 004167383

Lakewood, OH

Closure Costs \$ 68,000

Post-Closure Costs - 0 -

Union Carbide Corporation - Parma Facility

EPA ID NO. OHO 003926740

Parma, OH

Closure Costs \$ 119,000

Post-Closure Costs - 0 -

L-Tec Company - Ashtabula Plant

EPA ID NO. OHO 000821454

Ashtabula, OH

Closure Costs \$1,463,000

Post-Closure Costs \$ 553,000

* Revised as of 05/27/88

SCHEDULE B *

Union Carbide Corporation - Lakewood and Parma, OH
L-Tec Company - Ashtabula, OH

The Trust Fund is comprised of cash in the sum of \$2,082,000

* Revised as of 05/27/88



INTERNAL
CORRESPONDENCE

UNION CARBIDE CORPORATION P. O. BOX 6116, CLEVELAND, OHIO 44101
PARMA TECHNICAL CENTER

To (Name) J. K. Petros

Date March 3, 1988

Division

Location 500-P2

Originating Dept CPBG - HS&EP

Area

Area

Copy to G. A. Hamm/742
N. Hillson/720
D. A. Mieskowski/742

Subject RCRA Financial Assurance

Dear Jim:

In response to your February 16, 1988 request, the financial assurance data below is what should be used for the listed Carbon Products RCRA facilities.

| <u>Location</u> | <u>EPA Region</u> | <u>EPA I.D. No.</u> | <u>Closure Cost</u> | <u>Estimated Closure Date</u> |
|-----------------|-----------------------|-------------------------|-------------------------|-----------------------------------|
| Lakewood, Ohio | V | OHDO04167383 | \$ 67,678 | January 1, 2010 |
| Parma, Ohio | V | OHDO03926748 | \$118,690 | January 1, 2010 |

The closure date information is a best estimate for fund calculation purposes only. Actual closure dates for the Lakewood and Parma RCRA storage facilities are indefinite and will most likely continue to be used as long as the plant sites are operating. No post-closure costs requirements are anticipated.

The State Representative who should receive the above information is:

Director, Ohio Environmental Protection Agency
361 East Broad Street
Columbus, Ohio 43215

Please give me a call if you need additional information or have questions.

Very truly yours,

Terry
H. T. Prosser

HTP/lS/1181D

RECEIVE

MAR 4 1988

D. A. MIESKOWSKI

OhioEPA

State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

RECEIVED

NOV 5 1987

C. A. O'BOYLE



*cc: NY Prosser
COP Parma
1742*

Richard F. Celeste
Governor

October 30, 1987

Re: Union Carbide Lakewood
OHD004167383
Union Carbide Parma
OHD003926748
L-Tech OHD000821454
and Nat'l Electric Carbon Corp.
OHD004167219

C.A. D'Boyle, Manager
Union Carbide Corporation
Banking Department
39 Old Ridgebury Road
Danbury CT 06817-0001

Dear Ms. D'Boyle:

I have received the value of the trust fund as of September 1, 1987. The amount referenced is \$2,169,614.90. In completing my review of the trust fund submittal, I find the above referenced facilities to be in compliance with Ohio Administrative Code (OAC) Sections 3745-66-43 and 45.

If you have any questions, please contact me at (614)481-7227.

Sincerely,

Susan McDowell

Susan McDowell
S&E Section, DSHWM

SM/drr

1829S(12)

cc: Dave Sholtis, CO
Dave Wertz, NEDO
Chuck Hull, NWDO
Central File
RF/2

EXHIBIT A

The following individuals are authorized to act on behalf of the Grantor:

J. Clayton Stephenson
Vice-Chairman and Chief Financial and
Administrative Officer

J. A. Clerico
Vice-President and Treasurer

R. A. Bose
Assistant Treasurer and Assistant Secretary

T. D. Jones
Assistant Treasurer

0815D

SCHEDULE A

1. Union Carbide Corporation - Lakewood Plant
EPA ID #OHO 004167383
Lakewood, Ohio
Closure Costs \$68,000
Post-Closure Costs - 0 -
2. Union Carbide Corporation - Parma Facility
EPA ID #OHO 003926740
Parma, Ohio
Closure Costs \$62,000
Post-Closure Costs - 0 -
3. L-Tec Company - Ashtabula, Plant
EPA ID #OHO 000821454
Ashtabula, Ohio
Closure Costs \$616,000
Post-Closure Costs \$1,797,000
4. National Electric Carbon Corporation - Fostoria Plant
EPA ID # OHD 004167219
Fostoria, Ohio
Closure Costs \$34,000
Post-Closure Costs -0-

0815D

SCHEDULE B


The Trust Fund is comprised of cash in the sum of \$2,118,000

0815D

ACKNOWLEDGEMENT

State of Connecticut
County of Fairfield

On this April 30, 1987, before me personally came R. A. Bose to me known, who, being by me duly sworn, did depose and say that he resides at 8 Hitching Post Lane, Danbury, Ct 06811, that he is Assistant Treasurer and Assistant Secretary of Union Carbide Corporation, the corporation described in and which executed the above instrument; that he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.



Notary Public

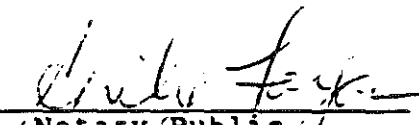
KATHY BAILEY CURRAN
NOTARY PUBLIC
MY COMMISSION EXPIRES MARCH 31, 1988

0815D

ACKNOWLEDGEMENT

State of New York
County of New York

On this day of April 20, 19⁸⁷, before me personally came John J. Fleming to me personally known who, by me duly sworn, did depose and says that (s)he resides in Brooklyn, New York; that (s)he is the Vice President of Chemical Bank, the banking institution described in and which executed the within Trust Fund Agreement; and that (s)he signed his/her name thereto by authority of such banking institution.



Notary Public

EMILY FAYON
Notary Public, State of New York
No. 24-873706
Qualified in Kings County
Commenced Term in New York County
Commission Expires December 31, 1990

0820D

UNION CARBIDE CORPORATION 39 OLD RIDGEBURY ROAD, DANBURY, CT 06817-0001

CAROLYN A. O'BOYLE
MANAGER
BANKING DEPARTMENT

May 12, 1988

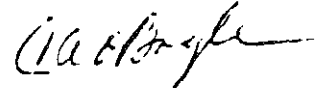
Director, Ohio Environmental
Protection Agency
361 East Broad Street
Columbus, OH 43215

Gentlemen:

Subject: Financial Assurance
Closure and Post-Closure
Hazardous Waste Management Facility

Attached are the revised Schedules A and B for the Trust Agreement dated as of April 30, 1987, between Union Carbide Corporation, the Grantor, and Chemical Bank, the Trustee.

Very truly yours,



Carolyn A. O'Boyle

CAO'B:kbc

Attachments

SCHEDULE A *

Union Carbide Corporation - Lakewood Plant

EPA ID No. OHO 004167383

Lakewood, OH

Closure Costs

\$ 68,000

Post-Closure Costs

- 0 -

Union Carbide Corporation - Parma Facility

EPA ID NO. OHO 003926740

Parma, OH

Closure Costs

\$ 119,000

Post-Closure Costs

- 0 -

L-Tec Company - Ashtabula Plant

EPA ID NO. OHO 000821454

Ashtabula, OH

Closure Costs

\$1,463,000

Post-Closure Costs

\$ 553,000

* Revised as of 05/27/88

SCHEDULE B *

Union Carbide Corporation - Lakewood and Parma, OH
L-Tec Company - Ashtabula, OH

The Trust Fund is comprised of cash in the sum of \$2,082,000

* Revised as of 05/27/88

TRUST AGREEMENT

Trust Agreement, the "Agreement," entered into as of April 30, 1987 by and between Union Carbide Corporation, a New York corporation, the "Grantor," and Chemical Bank, incorporated in the State of New York, the "Trustee."

Whereas, the Ohio Environmental Protection Agency, "Ohio EPA," an agency of the State of Ohio, has established certain regulations applicable to the Grantor, requiring that an owner or operator of a hazardous waste management facility shall provide assurance that funds will be available when needed for closure and/or post-closure care of the facility,

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein,

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Now, therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who entered into this Agreement and any successor Trustee.

(c) The term "Director" means the Director of the Ohio EPA, or his designee.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of Ohio EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund shall be held by the Trustee, IN TRUST, as hereinafter provided. The Trustee shall not

be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by Ohio EPA.

Section 4. Payment for Closure and Post-Closure Care. The Trustee shall make payments from the Fund as the Director shall direct, in writing, to provide for the payment of the costs of closure and/or post-closure care of the facilities covered by this Agreement. The Trustee shall reimburse the Grantor or other persons as specified by the Director from the Fund for closure and post-closure expenditures in such amounts as the Director shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the Director specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; expect that:

(i) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2.(a), shall not be acquired or held, unless they are securities or other obligations of the Federal or a State government;

(ii) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(iii) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. The Trustee shall annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the Director a statement confirming the value of the Trust. Any securities in the Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Director shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer, and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in

a writing sent to the Grantor, the Director, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests, and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the Ohio EPA to the Trustee shall be in writing, signed by the Director, or his designees, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or Ohio EPA hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or Ohio EPA, except as provided for herein.

Section 15. Notice of Nonpayment. The Trustee shall notify the Grantor and the Director, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Director, or by the Trustee and the Director if the Grantor ceases to exist.

Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee, and the Director, or by the Trustee and the Director, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expense, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the


Director issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law. This Agreement shall be administered, construed, and enforced according to the laws of the State of Ohio.

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written: The parties below certify that the wording of this Agreement is identical to the wording specified in paragraph (A)(1) of rule 3745-55-51 of the Ohio Administrative Code as such regulations were constituted [sic] on the date first above written.

Union Carbide Corporation


BY: R. A. Bose, Assistant Treasurer and
Assistant Secretary

Attest:
(Seal)

Chemical Bank

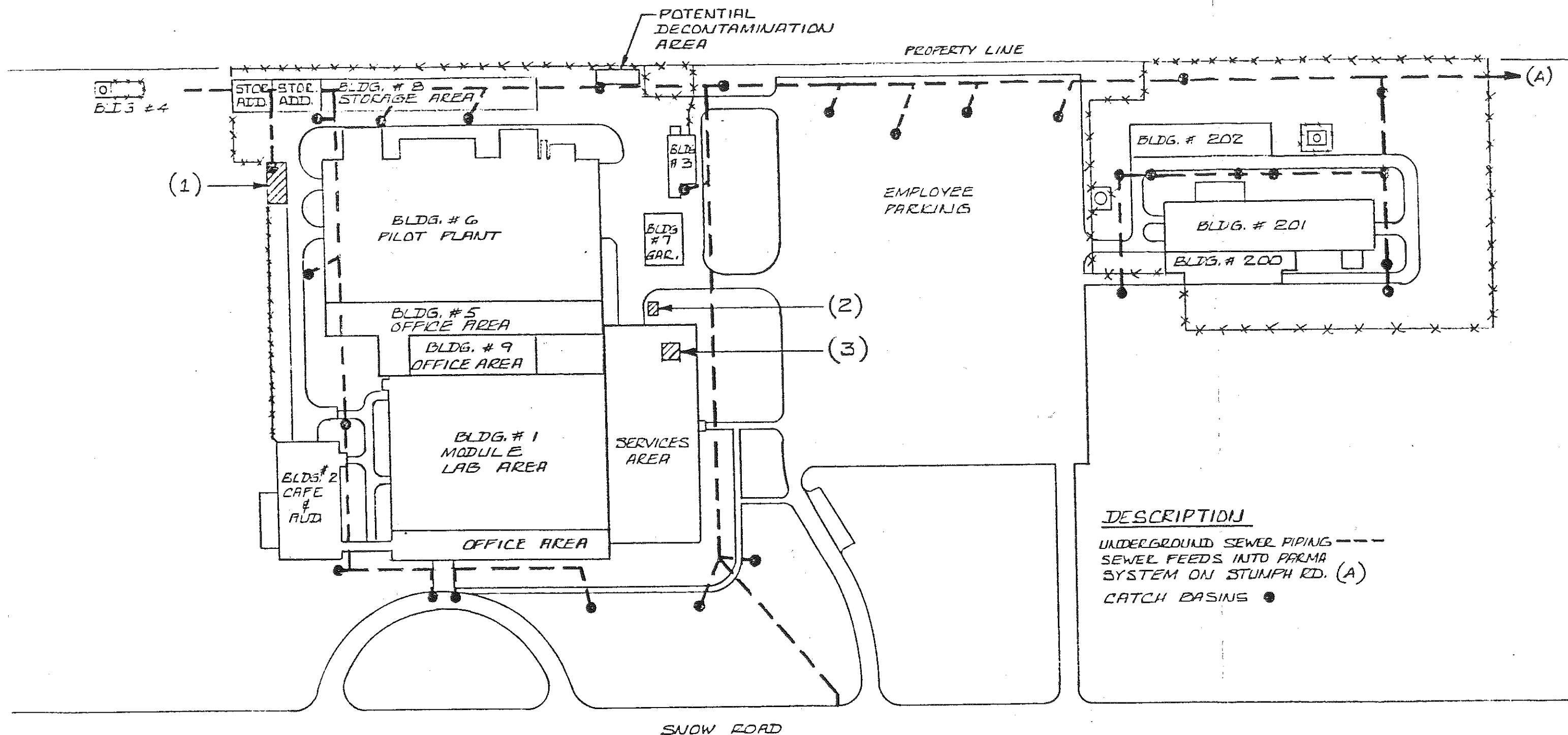
By: 
vrs

Attest:
(Seal)
0815D

SECTION XII

FIGURES

FIGURE # 1
UCAR CARBON COMPANY INC
PARMA TECHNICAL CENTER



- 1.) CONTAINER STORAGE AREA NO.1
(OUTSIDE DRUM STORAGE)
- 2.) CONTAINER ACCUMULATION AREA NO.2
(DRUM STORAGE BUILDING)
- 3.) CONTAINER STORAGE AREA NO.3
(INSIDE STORAGE ROOM 105)



FIGURE NO. 2

CONTAINER STORAGE
AREA NO. 1

UCAR CARBON COMPANY INC
PARMA TECHNICAL CENTER

DESCRIPTION

FENCE —X—X—X—X—X—
CORE SAMPLES •

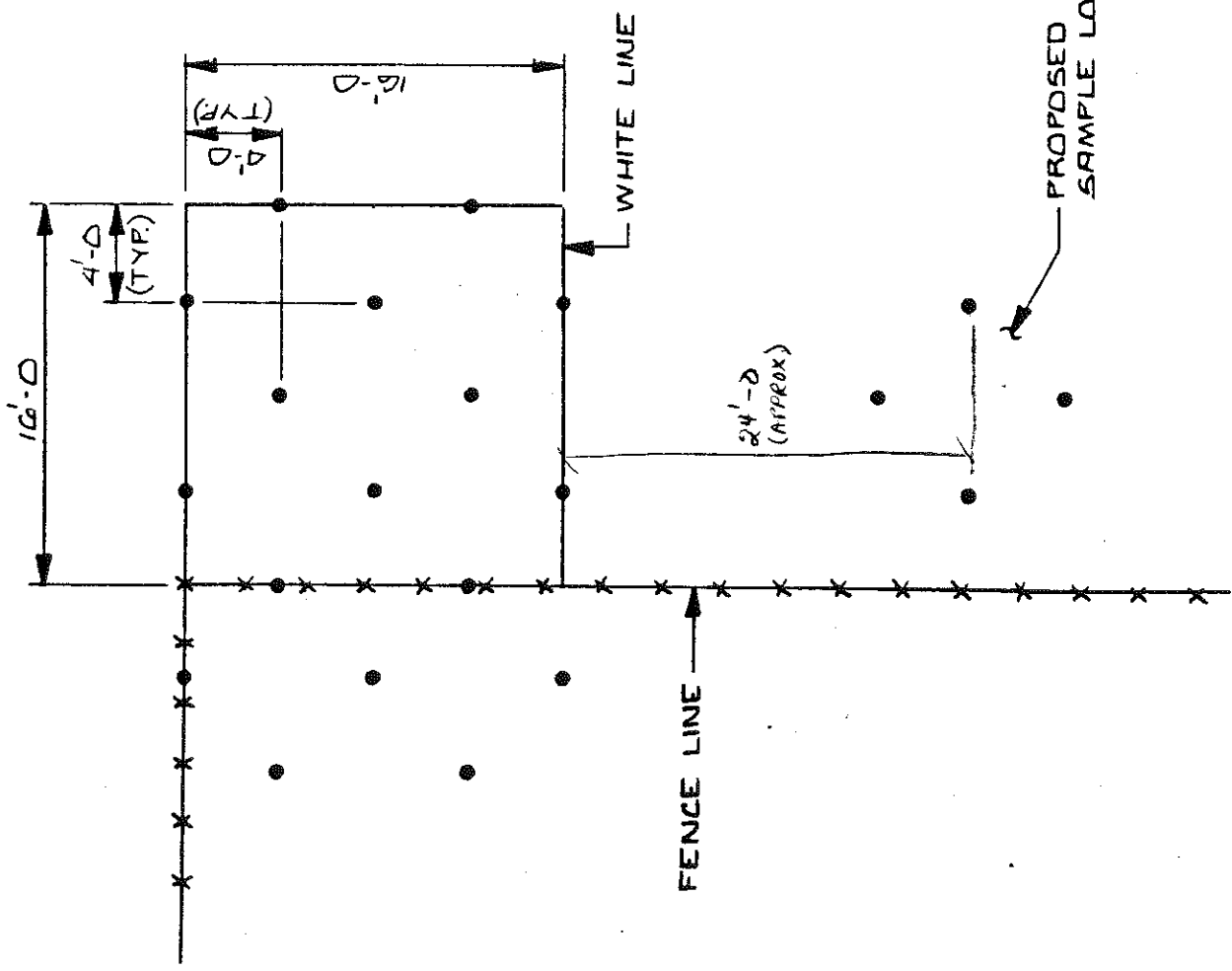


FIGURE NO. 3

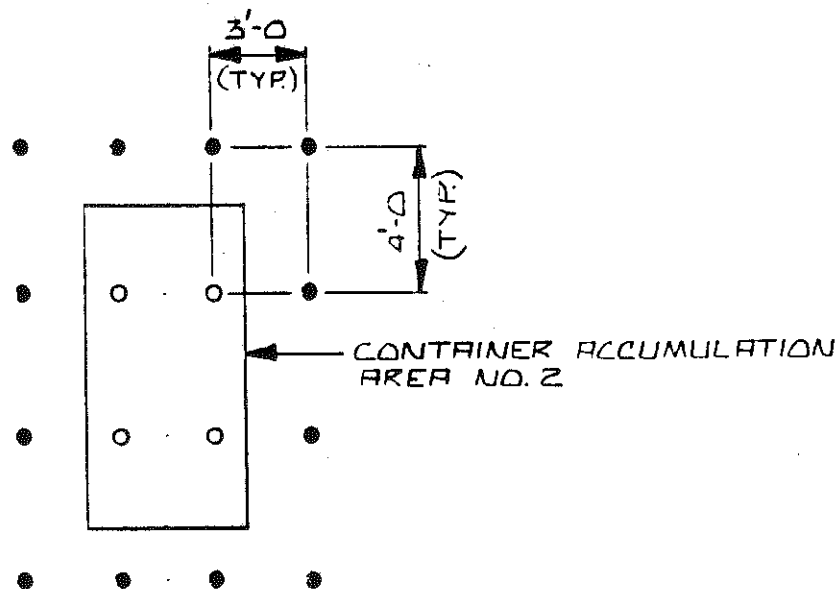
CONTAINER ACCUMULATION
AREA NO. 2

UCAR CARBON COMPANY INC.
PARMA TECHNICAL CENTER

DESCRIPTION

CORE SAMPLES ●

WIPE SAMPLES ○



PROPOSED BACKGROUND
SAMPLE LOCATION

SERVICES AREA

12'-0"
(APPROX.)

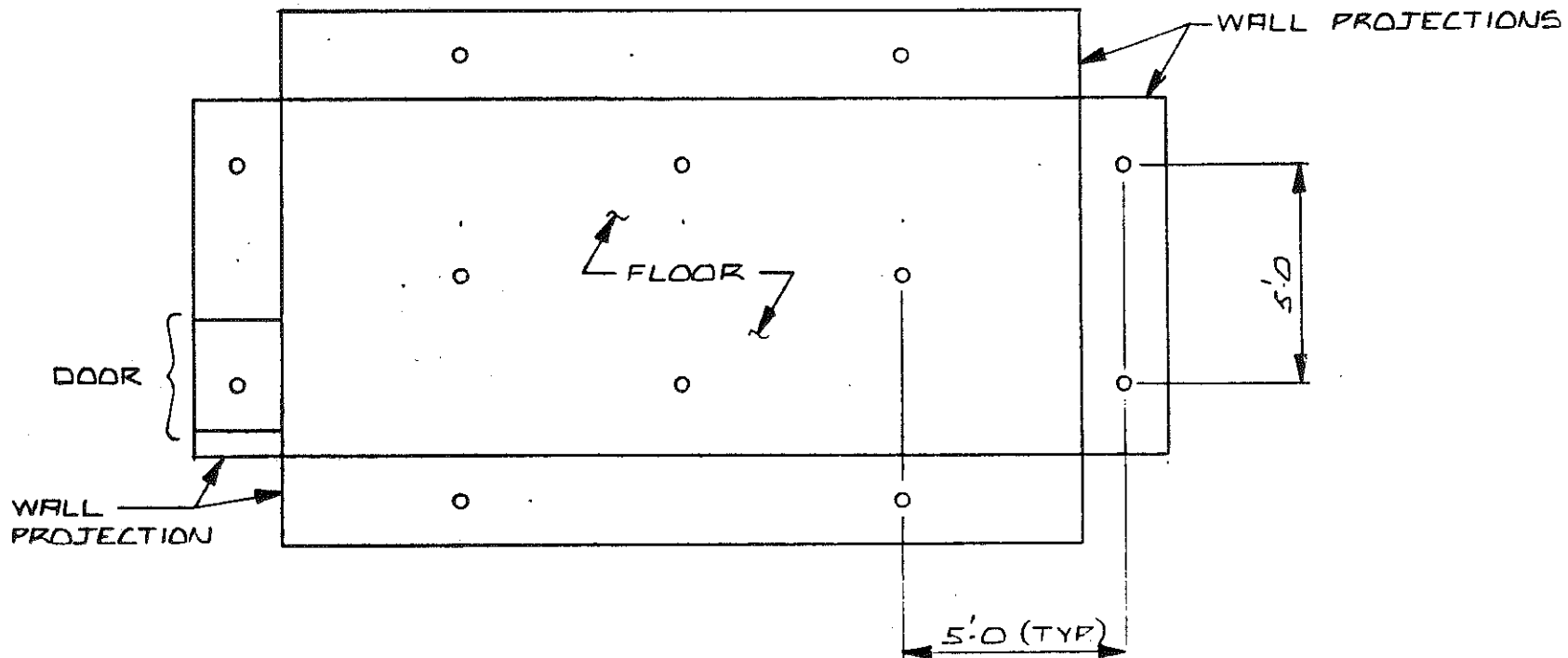
FIGURE NO. 4

CONTAINER STORAGE
AREA NO. 3

UCAR CARBON COMPANY INC.
PARMA TECHNICAL CENTER

DESCRIPTION

WIPE SAMPLES 0



A P P E N D I X A

(FIELD SAMPLING AND LABORATORY PROCEDURES)

FIELD SAMPLING AND LABORATORY PROCEDURES

1. SOIL SAMPLING

Two-inch diameter core samples will be obtained from soils at the UCC site. The sampling tube will be cleaned with soap, surfactant, and water, then rinsed with distilled water before taking each sample.

2. SAMPLE CONTAINER

Glass containers (quart jars) will be used for collecting and storing the soil samples. The jars will have tight, screw-type lids with aluminum foil or Teflon liners.

3. SAMPLE HANDLING

After a sample is collected and placed into the glass jar, the containers will immediately be tightly capped and refrigerated at 4°C.

4. SAMPLE LABELS AND SEALS

Each sample will be labeled to prevent misidentification. Gummed paper labels or masking tape may be used to label the samples.

Sample seals will also be used to preserve the integrity of the sample from the time it is collected until it is opened in the laboratory. Tape or gummed paper may be used as seals. The following information will be included on the sample labels:

- A. Name, address, and telephone number of UCC, Parma Technical Center
- B. Name, address, and telephone number of the laboratory
- C. Name or initials of the person collecting the sample
- D. Date and time of collection

E. Date of shipment

F. Sample identification (short description)

G. Quantity of sample (marked on bottle)

The seal will be marked and attached in such a way that it is necessary to break it in order to open the sample container.

5. SAMPLE DELIVERY TO THE LABORATORY

The samples will be sent to the laboratory immediately. The samples will be accompanied by a chain of custody record.

6. SHIPPING OF SAMPLES

All shipments of samples will be in compliance with the requirements of the U.S. Postal Service and those outlined in the DOT Hazardous Materials Table (40 CFR 172.101).

7. CHAIN OF CUSTODY AND SAMPLE RECORDS

A chain of custody establishes the documentation and control necessary to identify and trace a sample from collection to final analysis. Such documentation includes labeling to prevent the misidentification of samples and the shipping notice to support potential litigation.

Sample records will be kept and will include, at a minimum, the following information:

A. Date and time of sample

B. Name, address, and telephone number of sampler

C. Type of sample taken (core or wipe)

- D. Number and volume of samples taken
- E. Description of sample points and location
- F. Preservatives used (if any)
- G. Name, address, and telephone number of the laboratory
- H. Analyses requested or made
- I. Shipping notice number (will include date of shipment)

8. DECONTAMINATION OF SAMPLING EQUIPMENT

The sampling equipment will be washed with soap, surfactant, and water after collection of each sample. The equipment will then be rinsed twice with distilled water. The wash water will be discharged to the city sanitary sewer system.

Analysis

The soil and wipe samples will be analyzed for the following constituents: acetone, toluene, quinoline, methyl ethyl ketone, ethanol, methanol, chlorinated and nitrated organics, furfural, phenol, and dimethyl sulfoxide.* The analyses will be made in accordance with EPA Test Methods 8240 and 8270 in EPA SW-846. The following QC/QA activities will be included.

- A. Use of EPA-acceptable analytical methods.
- B. Calibration of laboratory instruments to within acceptable limits according to the methods described in SW-846 or manufacturer's specification.

- C. Periodic inspection, maintenance, and servicing (as necessary) of all laboratory instruments and equipment.
- D. The use of reference standards and QC samples (e.g., checks, spikes, laboratory blanks, duplicates, splits) as necessary to determine the accuracy and precision of procedures, instruments, and operators as described in the methods outlined in EPA SW-846.
- E. The use of adequate statistical procedures (e.g., QC charts) to monitor the precision and accuracy of the data and to establish acceptable limits.
- F. A continuous review of results to identify and correct problems within the measurement system (e.g., instrumentation problems, inadequate operator training, inaccurate measurement methodologies).
- G. Documenting the performance of systems and operators.
- H. Regular participation in external laboratory evaluations (including the EPA Performance Audit Program) to determine the accuracy and overall performance of the laboratory. This should include performance evaluation and interlaboratory comparison studies and formal field unit/laboratory evaluations and inspections.
- I. Use of an acceptable sample identification and formal chain-of-command procedures in the laboratory.
- J. Maintenance and storage of complete records, charts, and logs of all pertinent laboratory calibration, analytical, and QC activities and data.
- K. Adherence to prescribed maximum holding times before the analyses are made.

* These compounds were selected from the universe of wastes at the facility because one or more were present in any container stored. Consequently, if a discharge had occurred, one of these materials should be detected.



UCAR CARBON COMPANY INC. 39 OLD RIDGEBURY ROAD, DANBURY, CT 06817-0001
LAW DEPARTMENT PHONE: (203) 794-2513

June 4, 1991

VIA CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Director
Ohio Environmental Protection Agency
RCRA Enforcement Section
Division of Solid & Hazardous Waste Management
P.O. Box 1049
1800 Water Mark Drive
Columbus, OH 43266-0149

Gentlemen:

Further to our letter dated April 9, 1991, and pursuant to Chapter 3745-55-43(A), enclosed is an executed Trust Agreement between UCAR Carbon Company Inc. and Chemical Bank establishing a closure trust fund for the UCAR Carbon facilities listed on Schedule A. We trust that this agreement meets the requirements of Chapter 3745-55-43 requiring financial assurance for the closure of these facilities.

Very truly yours,

A handwritten signature in cursive script that reads "Karen G. Narwold".

Karen G. Narwold
Regulatory and
Commercial Counsel

KGN:jw

Enc.

cc: Regional Administrator
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

TRUST AGREEMENT

TRUST AGREEMENT, the "Agreement," entered into as of May 29, 1991 by and between UCAR Carbon Company Inc., a Delaware corporation, the "Grantor" and Chemical Bank, incorporated in the State of New York, the "Trustee."

WHEREAS, the Ohio Environmental Protection Agency, "Ohio EPA," has established certain rules applicable to the Grantor, requiring that the owner or operator of a hazardous waste management facility must provide assurance that funds will be available when needed for closure and/or post-closure care of the facility;

WHEREAS, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the facilities identified herein;

WHEREAS, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

NOW, THEREFORE, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

(a) The term "Grantor" means the owner or operator who enters into this Agreement and any successors or assigns of the Grantor.

(b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

(c) The term "Director" means the Director of the Ohio EPA or his designee.

Section 2. Identification of Facilities and Cost Estimates. This Agreement pertains to the facilities and cost estimates identified on attached Schedule A.

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of Ohio EPA. The Grantor and the Trustee intend that no third party have access to the Fund except as herein provided. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached hereto. Such property and any other property subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits thereon, less any payments or distributions made by the Trustee pursuant to this Agreement. The Fund will be held by the Trustee, in trust, as hereinafter provided. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor established by Ohio EPA.

Section 4. Payment for Closure and Post-Closure Care. The Trustee will make such payments from the Fund as the Director will direct, in writing, to provide for the payment of the costs of closure and/or post-closure care of the facilities covered by this Agreement. The Trustee will reimburse the Grantor and other persons as specified by the Director from the Fund for closure and post-closure expenditures in such amounts as the Director will direct in writing. In addition, the Trustee will refund to the Grantor such amounts as the Director specifies in writing. Upon refund, such funds will no longer constitute part of the Fund as defined herein.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund will consist of cash or securities acceptable to the Trustee.

Section 6. Trustee Management. The Trustee will invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling, and managing the Fund, the Trustee will discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill,

prudence, and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

(a) Securities or other obligations of the Grantor, or any other owner or operator of the facilities, or any of their affiliates as defined in the Investment Company Act of 1940, as amended, 15 U.S.C. 80a-2 (a), will not be acquired or held, unless they are securities or other obligations of the Federal or a State Government;

(b) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by an agency of the Federal or State government; and

(c) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

(a) To transfer from time to time any or all of the assets of the Fund to any common, commingled, or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

(b) To purchase shares in any investment company registered under the Investment Company Act of 1940, 15 U.S.C. 80a-1 et seq., including one which may be created, managed, underwritten, or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this Agreement or by law, the Trustee is expressly authorized and empowered:

(a) To sell, exchange, convey, transfer, or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee will be bound to see to the application of the purchase money or to inquire into the validity or expediency of any such sale or other disposition;

(b) To make, execute, acknowledge, and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers herein granted;

(c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such

securities in a qualified central depository even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depository with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve bank, but the books and records of the Trustee will at all times show that all such securities are part of the Fund;

(d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by an agency of the Federal or State government; and

(e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund will be paid from the Fund. All other expenses incurred by the Trustee in connection with the administration of this Trust, including fees for legal services rendered to the Trustee, the compensation of the Trustee to the extent not paid directly by

the Grantor, and all other proper charges and disbursements of the Trustee will be paid from the Fund.

Section 10. Annual Valuation. The Trustee will annually, at least 30 days prior to the anniversary date of establishment of the Fund, furnish to the Grantor and to the Director a statement confirming the value of the Trust. Any securities in the Fund will be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Fund. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the Director will constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of Counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this Agreement or any action to be taken hereunder. The Trustee will be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee will be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and this successor accepts the appointment. The successor Trustee will have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor Trustee's acceptance of the appointment, the Trustee will assign, transfer, and pay over to the successor Trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor Trustee or for instructions. The successor Trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the Director, and the present Trustee by certified mail 10 days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests, and instructions by the Grantor to the Trustee will be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee will be fully protected in acting without inquiry in accordance with

the Grantor's orders, requests, and instructions. All orders, requests, and instructions by the Director to the Trustee will be in writing, signed by the Director, and the Trustee will act and will be fully protected in acting in accordance with such orders, requests, and instructions. The Trustee will have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or the Director hereunder has occurred. The Trustee will have no duty to act in the absence of such orders, requests, and instructions from the Grantor and/or the Director, except as provided for herein.

Section 15. Notice of Nonpayment. The Trustee will notify the Grantor and the Director, by certified mail within 10 days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee is not required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee, and the Director, or by the Trustee and the Director if the Grantor ceases to exist.

Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust will be irrevocable and will continue until terminated at the written agreement of the Grantor, the Trustee, and the Director, or by the Trustee and the Director, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, will be delivered to the Grantor.

Section 18. Immunity and indemnification. The Trustee will not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the Director issued in accordance with this Agreement. The Trustee will be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law. This Agreement will be administered, construed, and enforced according to the laws of the State of Ohio.

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement will not affect the interpretation of the legal efficacy of this Agreement.

IN WITNESS WHEREOF the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written: The parties below certify that the wording of this Agreement is identical to the wording specified in paragraph (A)(1) of rule 3745-55-51 of the Ohio Administrative Code as such regulations were constituted on the date first above written.

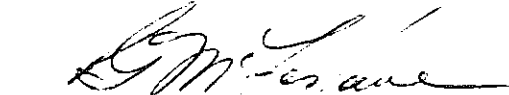
UCAR CARBON COMPANY INC.



By: P.B. Mancino
Secretary

Karen D. Narwold
Attest: *Asst Secretary*
(Seal)

CHEMICAL BANK



By: G. McFarlane
Senior Trust Officer

Attest:
(Seal) 
Assistant Trust Officer

EXHIBIT A

The following individuals are authorized to act on behalf of the Grantor:

R. Estera
Vice-President and Chief Financial Officer

R.E. Hewson
Assistant Treasurer - Domestic

P.B. Mancino
Vice President, General Counsel and Secretary

K.G. Narwold
Regulatory Counsel

SCHEDULE A

Name: UCAR Carbon Company Inc.
Address: 11709 Madison Ave.
Lakewood, Ohio
EPA #: OHD 004167383
Ohio Permit #: 02-18-0132
Closure: \$150,000
Post-Closure: \$0

Name: UCAR Carbon Company Inc.
Address: 12900 Snow Road
Parma, Ohio
EPA #: OHD 003926748
Ohio Permit #: 02-18-0104
Closure: \$4,000
Post-Closure: \$0

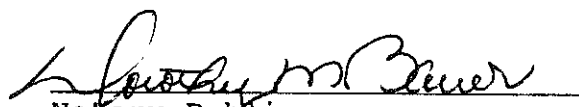
SCHEDULE B

The Trust Fund is comprised of cash in the sum of \$154,000.

ACKNOWLEDGEMENT

State of Connecticut
County of Fairfield

On this May 24, 1991, before me personally came Peter B. Mancino, to me known, who, being by me duly sworn, did depose and say that he resides at 10 Titicus Mountain Road, New Fairfield, CT 06812, that he is Vice President, General Counsel and Secretary of UCAR Carbon Company Inc., the corporation described in and which executed the above instrument; that he knows the seal of such corporation, that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.


Notary Public

DOROTHY M. BAUER
NOTARY PUBLIC
MY COMMISSION EXPIRES MARCH 31, 1994

ACKNOWLEDGEMENT

State of New York
County of New York

On this day of May 29, 1991, before me personally came G. McFARLANE to me personally known who, by me duly sworn, did depose and say that (s)he resides in 1670 N. GARDNER DR. BAYSHORE, N. Y. 11708; and that (s)he is the SENIOR TRUST OFFICER of Chemical Bank, the banking institution described in and which executed the within Trust Fund Agreement; and that (s)he signed his/her name thereto by authority of such banking institution.


Notary Public

FRANK S. FEOKO
Notary Public, State of New York
No. 41-4861375
Qualified in Queens County
Certificate Filed in New York County
Commission Expires June 2, 1992

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

39 OLD RIDGEBURY ROAD

DANBURY, CT 06817-0001

CORPORATE GUARANTEE FOR CLOSURE

AND

POST-CLOSURE CARE (OHIO)

Guarantee made this March 30, 1990 by Union Carbide Chemicals and Plastics Company Inc., a business corporation organized under the laws of the State of New York, herein referred to as guarantor, to the Ohio Environmental Protection Agency, obligee, on behalf of our subsidiaries UCAR Carbon Company Inc., of Lakewood, Ohio and Parma, Ohio and Union Carbide Industrial Gases, Inc. (Amko Service Company) of Dover, Ohio.

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in Paragraph (F) of rules 3745-55-43 and 3745-55-45 of the Administrative Code or Paragraph (E) of rules 3745-66-43 and 3745-66-45 of the Administrative Code.
2. UCAR Carbon Company Inc., and Amko Service Company own or operate the following hazardous waste management facilities covered by this guarantee:

| | |
|---------------|----------------------------|
| Name | - UCAR Carbon Company Inc. |
| Address | - Lakewood, Ohio |
| EPA # | - OH0004167383 |
| Ohio Permit # | - 02-18-0132 |
| Closure | - \$ 42,000 |
| Post-Closure | - \$ 118,000 |

| | |
|---------------|----------------------------|
| Name | - UCAR Carbon Company Inc. |
| Address | - Parma, Ohio |
| EPA # | - OHD003926748 |
| Ohio Permit # | - 02-18-0104 |
| Closure | - \$ 173,200 |
| Post-Closure | - \$ 0 |

Name - Amko Service Company
Address - Dover, Ohio
EPA # - OHD17998022
Closure - \$25,000
Post-Closure - \$35,000

3. "Closure plans" and "post-closure plans" as used below refer to the plans maintained as required by Chapters 3745-55 and 3745-66 of the Administrative Code for the closure and post closure care of facilities as identified above.
4. For value received from UCAR Carbon Company Inc. and Amko Service Company, guarantor guarantees to Ohio EPA that in the event that UCAR Carbon Company Inc and/or Amko Service Company fails to perform "closure and post-closure care" of the above facilities in accordance with the closure or post-closure plans and other permit or interim status requirements whenever required to do so, the guarantor shall do so or establish a trust fund as specified in Chapters 3745-55 and 3745-66 of the Administrative Code as applicable, in the name of UCAR Carbon Company Inc and/or Amko Service Company in the amount of the current closure or post-closure cost estimates as specified in Chapters 3745-55 and 3745-66 of the Administrative Code.
5. Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the Director, Ohio EPA and to UCAR Carbon Company Inc. and Amko Service Company that he intends to provide alternate financial assurance as specified in Chapters 3745-55 and 3745-66 of the Administrative Code as applicable, in the name of UCAR Carbon Company Inc. Within 120 days after the end of such fiscal year, the guarantor shall establish such financial assurance unless UCAR Carbon Company Inc. and/or Amko Service Company has done so.
6. The guarantor agrees to notify the Director by certified mail, of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceedings.
7. Guarantor agrees that within 30 days after notified by the Director of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor of closure or post-closure care, he shall establish alternate financial assurance as specified in Chapters 3745-55 or 3745-66 of the Administrative Code as applicable, in the name of UCAR Carbon Company Inc. and Amko Service Company or unless UCAR Carbon Company Inc. and/or Amko Service Company has done so.

8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the closure or post-closure plan, amendment or modification of the permit, the extension or reduction of the time of performance of closure or post-closure, or any other modification or alteration of an obligation of the owner or operator pursuant to Chapters 3745-55 or 3745-66 of the Administrative Code.
9. Guarantor agrees to remain bound under the guarantee for so long as UCAR Carbon Company Inc. and Amko Service Company must comply with the applicable financial assurance requirements of Chapters 3745-55 or 3745-66 of the Administrative Code for the above-listed facilities, except that guarantor may cancel this guarantee by sending notice by certified mail to the Director and to UCAR Carbon Company Inc. and Amko Service Company such cancellation to become effective no earlier than 120 days after receipt of such notice by both Ohio EPA and UCAR Carbon Company Inc. and Amko Service Company as evidenced by the return receipts.
10. Guarantor agrees that if UCAR Carbon Company Inc. and/or Amko Service Company fails to provide alternate financial assurance as specified in Chapters 3745-55 or 3745-66 of the Administrative Code as applicable, and obtain written approval of such assurance from the Director within 90 days after a notice of cancellation by the guarantor is received by the Director from guarantor, guarantor shall provide such alternate financial assurance in the name of UCAR Carbon Company Inc. and/or Amko Service Company.
11. Guarantor expressly waives notice of acceptance of this guarantee by the Ohio EPA or by UCAR Carbon Company Inc. and Amko Service Company. Guarantor also expressly waives notice of amendments or modifications of the closure and/or post-closure plan and of amendments or modifications of the facility permits.

I hereby certify that the wording of this guarantee is identical to the wording specified in Paragraph (H) of rule 3745-55-51 of the Administrative Code as such regulations were constituted on the date first above written.

Effective Date:

(Name of Guarantor):

(Authorized signature for guarantor):

(Name of person signing):

(Title of person signing):

March 30, 1990

UNION CARBIDE CHEMICALS
AND PLASTICS COMPANY INC.

John A. Clerico

Vice President, Treasurer
and Principal Financial
Officer

Signature of witness or notary:

Ramona E. Trautlein

0708R

UNION CARBIDE CHEMICALS AND PLASTICS COMPANY INC.

39 OLD RIDGEBURY ROAD

DANBURY, CT 06817-0001

CERTIFIED MAIL

March 30, 1990

RETURN RECEIPT REQUESTED

Director
Ohio Environmental Protection Agency
RCRA Enforcement Section
Division of Solid & Hazardous Waste Management
P. O. Box 1049
1800 Water Mark Drive
Colombus, OH 43266-0149

Gentlemen:

I am the chief financial officer of Union Carbide Chemicals and Plastics Company Inc., 39 Old Ridgebury Road, Danbury, Connecticut 06817. This letter is in support of this firm's use of the financial test to demonstrate financial assurance, as specified in Chapters 3745-55 and 3745-66 of the Administrative Code.

1. This firm is the owner or operator of the following facilities for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Chapters 3745-55 and 3745-66 of the Administrative Code. The current closure and/or post-closure cost estimates covered by the test are shown for each facility:

- None -

2. This firm guarantees, through the corporate guarantee specified in Chapters 3745-55 and 3745-66 of the Administrative Code, the closure or post-closure care of the following facilities owned or operated by subsidiaries of this firm. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility:

OHD 004 167 383 ORIGINAL

✓ OHD 003 926 748

OHD 017 998 022

RECEIVED
MAY 1 1990
OFFICE OF RCRA
WASTE MANAGEMENT
DIVISION
EPA REGION V

Name - UCAR Carbon Company, Inc.
Address - Lakewood, Ohio
EPA # - OH0004167383
Ohio Permit # - 02-18-0132
Closure - \$ 42,000
Post-Closure - \$ 118,000

Name - UCAR Carbon Company Inc.
Address - Parma, Ohio
EPA # - OHD003926748
Ohio Permit # - 02-18-0104
Closure - \$ 173,200
Post-Closure - \$ 0

Name - Amko Service Company
Address - Dover, Ohio
EPA # - OHD17998022
Closure - \$25,000
Post-Closure - \$35,000

3. In States where U.S. EPA or a State so authorized is administering the financial requirements of Subpart H of 40 C.F.R. Parts 264 and 265, this firm, as owner or operator or guarantor, is demonstrating financial assurance for the closure or post-closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in Chapter 3745-55 and 3745-66 of the Administrative Code. The current closure and/or post-closure cost estimates covered by such a test are shown for each facility:

Name - Union Carbide Chemicals and Plastics
Company Inc.
Address - Hahnville, Louisiana
EPA # - LAD041581422
Closure - \$ 381,465
Post-Closure - \$1,025,440

Name - Union Carbide Chemicals and Plastics
Company Inc.
Specialty Chemicals Division
Address - So. Charleston, WV
EPA # - WVD005005483
WVD980554885
Closure - \$7,954,194
Post-Closure - \$2,083,266

| | |
|-------------------|---|
| Name | - Union Carbide Chemicals and Plastics Company Inc. |
| Address | - Woodbine, Georgia |
| EPA # | - GAD981235294 |
| Closure | - \$0 |
| Post-Closure | - \$2,569,050 |
| | |
| Name | - Union Carbide Chemicals and Plastics Company Inc. |
| | Specialty Chemicals Division |
| Address | - Sistersville, WV |
| EPA # | - WVD004325353 |
| Closure | - \$1,121,040 |
| Post-Closure | - \$1,598,520 |
| | |
| Name | - Union Carbide Chemicals and Plastics Company Inc. |
| | Specialty Chemicals Division |
| Address | - Nitro, WV |
| EPA # | - WVD000739722 |
| Closure | - \$ 0 |
| Post-Closure | - \$ 996,480 |
| | |
| Name | - Union Carbide Chemicals and Plastics Company Inc. |
| | Engineering, Manufacturing and Technology Services (Technical Center) |
| Address | - So. Charleston, WV |
| EPA # | - WVD060682291 |
| Closure | - \$ 88,568 |
| Post-Closure | - \$ 0 |
| | |
| Name | - Union Carbide Chemicals and Plastics Company Inc. |
| | Polyolefins Division |
| Address | - Port Lavaca, Texas |
| EPA # | - TXD041515420 |
| Closure | - \$2,428,609 |
| Post-Closure | - \$2,526,181 |
| Corrective Action | - \$3,281,118 |
| | |
| Name | - Union Carbide Chemicals and Plastics Company Inc. |
| | Solvents & Coating Materials Division |
| Address | - Brownsville, Texas |
| EPA # | - TXD008114092 |
| Closure | - \$ 159,852 |
| Post-Closure | - \$3,253,092 |

Name - Union Carbide Chemicals and Plastics
Company Inc.
Solvents & Coating Materials Division
Address - Texas City, Texas
EPA # - TXD000461533
- TXD980626782
Closure - \$514,410
Post-Closure - \$671,659
Corrective
Action - \$4,846,422

4. This firm is the owner or operator of the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care is not demonstrated to Ohio EPA through the financial test or any other financial assurance mechanism specified in Chapters 3745-55 and 3745-66 of the Administrative Code or equivalent or substantially equivalent State mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility:

- None -

This firm is required to file a form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on December 31. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended December 31, 1989.

ALTERNATIVE II

(MM \$)

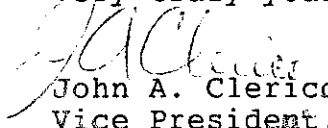
- | | |
|--|------|
| 1. Sum of current closure and post-closure cost estimates. (Total of all cost estimates shown in the four paragraphs above.) | 35.9 |
|--|------|

| | |
|---|--|
| 2. Current bond rating of most recent issuance of this firm and name of rating services (senior debt). | BBB Standard and Poor's; Baa2 Moody's Investor Services |
| 3. Date of issuance of bond. | 1/16/86 |
| 4. Date of maturity of bond. | Senior Notes due 1996; Senior Debentures due 2006. |
| *5. Tangible net worth (including closure and post-closure cost estimates included in "total liabilities" on balance sheet. | \$2,282 |
| *6. Total assets in U.S. (required only if less than 90% of firm's assets are located in the U.S.) | \$5,771 |
| | <u>YES</u> <u>NO</u> |
| 7. Is line 5 at least \$10 million? | X |
| 8. Is line 5 at least 6 times line 1? | X |
| *9. Are at least 90% of firm's assets located in the U.S.? If not, complete line 10. | X |
| 10. Is line 6 at least 6 times line 1? | X |

I hereby certify that, with the exceptions of paragraphs 1a and 3a, the wording of this letter is identical to the wording specified in paragraph (F) of rule 3745-55-51 of the Administrative Code as such regulations were constituted on the date shown immediately below.

March 30, 1990

Very truly yours,


John A. Clerico
Vice President, Treasurer and
Principal Financial Officer

Regional Administrator
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

0676R



KPMG Peat Marwick

Certified Public Accountants

One Plaza West
100 Mill Plain Road
Danbury, CT 06811

The Board of Directors
Union Carbide Chemicals and Plastics Company Inc.:

We have audited, in accordance with generally accepted auditing standards, the consolidated balance sheet of Union Carbide Chemicals and Plastics Company Inc. and subsidiaries (the "Company") as of December 31, 1989 and the related consolidated statements of income, stockholder's equity and cash flows for the year then ended, and have issued our report thereon dated February 26, 1990.

In accordance with Subpart H of Title 40 CFR Parts 264 and 265 of the Code of Federal Regulations, we compared the data in Items 5, 6 and 9 of the letter from the Vice President, Treasurer and Principal Financial Officer dated March 30, 1990 in support of the Company's use of the financial test to demonstrate financial assurance, as specified in such regulations, with the audited financial statements.

In connection with the procedures referred to in the paragraph above, no matters came to our attention that caused us to believe that the specified data should be adjusted.

We understand that this report is intended solely to assist you in evaluating the Company's adherence to the requirements of Subpart H of Title 40 CFR Parts 264 and 265 of the Code of Federal Regulations and should not be used for any other purpose.

KPMG Peat Marwick

March 30, 1990



Member Firm of

Dear -
Pls send copies to the
3 pt. files
Thanks

UNION CARBIDE CORPORATION 39 OLD RIDGEBURY ROAD, DANBURY, CT 06817-0001

CAROLYN A. O'BOYLE
MANAGER
BANKING DEPARTMENT

O: WMD -
CC: RF

June 13, 1989

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Director
Ohio Environmental Protection Agency
RCRA Enforcement Section
Division of Solid and Hazardous Waste Management
P.O. Box 1049
1800 Water Mark Drive
Columbus, OH 43266-0149

Gentlemen:

On May 16, 1989, J. Clayton Stephenson, Vice Chairman, Chief Financial and Administrative Officer of Union Carbide Corporation (UCC), executed a letter in support of UCC's use of the financial test (Alternative II) and Corporate Guarantee to demonstrate financial assurance. The facilities in your state are shown below:

| | |
|---------------|-----------------------------|
| Name | - L-Tec Company |
| Address | - Ashtabula, Ohio |
| EPA # | - OH0000821454 |
| Ohio Permit # | - 02-04-0404 |
| Closure | - \$ 500,000 |
| Post-Closure | - \$ 550,000 |
| | |
| Name | - UCAR Carbon Company, Inc. |
| Address | - Lakewood, Ohio |
| EPA # | - OH0004167383 |
| Ohio Permit # | - 02-18-0132 |
| Closure | - \$ 191,000 |
| Post-Closure | - \$ 0 |
| | |
| Name | - UCAR Carbon Company, Inc. |
| Address | - Parma, Ohio |
| EPA # | - OH0003926748 |
| Ohio Permit # | - 02-18-0104 |
| Closure | - \$ 173,200 |
| Post-Closure | - \$ 0 |

RECEIVED

JUN 22 1989

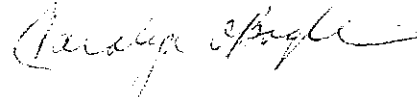
U. S. EPA REGION 5
OFFICE OF REGIONAL ADMINISTRATOR

We previously provided for financial assurance by use of a trust fund for which Chemical Bank acts as Trustee. The Trust Agreement is dated April 30, 1987. As provided in Section 4 of the Trust Agreement, we hereby request that the Director authorize in writing the trustee to refund to UCC (the Grantor) the total amount in the trust fund for the State of Ohio. This authorization letter should be addressed to:

Mr. Gregory K. McFarlane
Senior Trust Officer
Chemical Bank
Corporate Trust Dept.
55 Water Street, Suite 1820
New York, NY 10041

Kindly send me a copy of your letter of authorization to Chemical Bank. Your assistance in expediting release of the funds in accordance with the time limitations set forth in the applicable regulations would be appreciated. Please contact me at 203-794-7252 if I can be of assistance.

Very truly yours,



C. A. O'Boyle

CAO'B:RT
0050T/11

cc: G. K. McFarlane, Senior Trust Officer
Chemical Bank

Regional Administrator ✓
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

UNION CARBIDE CORPORATION

39 OLD RIDGEBURY ROAD

DANBURY, CT 06817-0001

J. CLAYTON STEPHENSON

VICE CHAIRMAN

CERTIFIED MAIL

May 16, 1989

SUPERFUND PROGRAM
MANAGEMENT BRANCHRECEIVED
JUN 02 1989

Director
Ohio Environmental Protection Agency
RCRA Enforcement Section
Division of Solid & Hazardous Waste Management
P. O. Box 1049
1800 Water Mark Drive
Columbus, OH 43266-0149

Regional Administrator
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Gentlemen:

I am the chief financial officer of Union Carbide Corporation, 39 Old Ridgebury Road, Danbury, Connecticut 06817. This letter is in support of this firm's use of the financial test to demonstrate financial assurance, as specified in Chapters 3745-55 and 3745-66 of the Administrative Code.

1. This firm is the owner or operator of the following facilities for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in Chapters 3745-55 and 3745-66 of the Administrative Code. The current closure and/or post-closure cost estimates covered by the test are shown for each facility:

- None -

- 1a. The firm is the former owner or operator of the following facilities for which financial assurance for closure or post-closure care is demonstrated through the financial test specified in chapters 3745-55 and 3745-66 of the Administrative Code. The current closure and/or post-closure cost estimates covered by the test are shown for each facility:

Name - L-Tec Company
Address - Ashtabula, Ohio
EPA # - OH0000821454
Ohio Permit # - 02-04-0404
Closure - \$ 500,000
Post-Closure - \$ 550,000

2. This firm guarantees, through the corporate guarantee specified in Chapters 3745-55 and 3745-66 of the Administrative Code, the closure or post-closure care of the following facilities owned or operated by subsidiaries of this firm. The current cost estimates for the closure or post-closure care so guaranteed are shown for each facility:

Name - UCAR Carbon Company, Inc.
Address - Lakewood, Ohio
EPA # - OH0004167383
Ohio Permit # - 02-18-0132
Closure - \$ 191,000
Post-Closure - \$ 0

Name - UCAR Carbon Company Inc.
Address - Parma, Ohio
EPA # - OHD003926748
Ohio Permit # - 02-18-0104
Closure - \$ 173,200
Post-Closure - \$ 0

3. In States where U.S. EPA or a State so authorized is administering the financial requirements of Subpart H of 40 C.F.R. Parts 264 and 265, this firm, as owner or operator or guarantor, is demonstrating financial assurance for the closure or post-closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in Chapter 3745-55 and 3745-66 of the Administrative Code. The current closure and/or post-closure cost estimates covered by such a test are shown for each facility:

Name - Union Carbide Caribe, Inc.
Address - Ponce, Puerto Rico
EPA # - PRD980594618
Closure - \$8,566,000
Post-Closure - \$7,950,000

Name - Union Carbide Corporation
Address - Hahnville, Louisiana
EPA # - LAD041581422
Closure - \$ 697,232
Post-Closure - \$ 529,800

Name - Union Carbide Industrial Gases, Inc.
 Address - Tonawanda, NY
 EPA # - NYD002123792
 Closure - \$ 100,000
 Post-Closure - \$ 0

Name - Union Carbide Corporation
 Specialty Chemicals Division
 Address - So. Charleston, WV
 EPA # - WVD005005483
 WVD980554885
 Closure - \$7,608,630
 Post-Closure - \$1,995,714

Name - Union Carbide Corporation
 Address - Woodbine, Georgia
 EPA # - GAD981235294
 Closure - \$0
 Post-Closure - \$2,475,000

Name - Union Carbide Corporation
 Specialty Chemicals Division
 Address - Sistersville, WV
 EPA # - WVD004325353
 Closure - \$2,692,889
 Post-Closure - \$1,601,656

Name - Union Carbide Corporation
 Specialty Chemicals Division
 Address - Nitro, WV
 EPA # - WVD000739722
 Closure - \$ 0
 Post-Closure - \$ 994,560

Name - Union Carbide Corporation
 Engineering, Manufacturing and Technology
 Services (Technical Center)
 Address - So. Charleston, WV
 EPA # - WVD060682291
 Closure - \$ 85,326
 Post-Closure - \$ 0

Name - Union Carbide Corporation
 Polyolefins Division
 Address - Port Lavaca, Texas
 EPA # - TXD041515420
 Closure - \$2,890,500
 Post-Closure - \$2,750,700
 Corrective
 Action - \$3,840,000

Name - Union Carbide Corporation
Solvents & Coating Materials Division
Address - Brownsville, Texas
EPA # - TXD008114092
Closure - \$1,429,680
Post-Closure - \$ 560,476

Name - Union Carbide Corporation
Solvents & Coating Materials Division
Address - Texas City, Texas
EPA # - TXD000461533
- TXD980626782
Closure - \$432,123
Post-Closure - \$647,070

- 3a. In States where U.S. EPA or a State so authorized is administering the financial requirements of Subpart H of 40 C.F.R. Parts 264 and 265, this firm, as former owner or operator, is demonstrating financial assurance for the closure or post-closure care of the following facilities through use of a test equivalent or substantially equivalent to the financial test specified in Chapter 3745-55 and 3745-66 of the Administrative Code. The current closure and/or post closure cost estimates covered by such a test are shown for each facility:

Name - L-Tec Company
Address - Florence, South Carolina
EPA # - SCD005574967
Closure - \$ 475,000
Post-Closure - \$1,100,000

4. This firm is the owner or operator of the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care is not demonstrated to Ohio EPA through the financial test or any other financial assurance mechanism specified in Chapters 3745-55 and 3745-66 of the Administrative Code or equivalent or substantially equivalent State mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility:

- None -

This firm is required to file a form 10K with the Securities and Exchange Commission (SEC) for the latest fiscal year.

The fiscal year of this firm ends on December 31. The figures for the following items marked with an asterisk are derived from this firm's independently audited, year-end financial statements for the latest completed fiscal year, ended December 31, 1988.

ALTERNATIVE II


(MM \$)

- | | |
|--|---|
| 1. Sum of current closure and post-closure cost estimates. (Total of all cost estimates shown in the four paragraphs above.) | \$50.8 |
| 2. Current bond rating of most recent issuance of this firm and name of rating services. | Baa2-Moody's Investor Services, Inc. |
| 3. Date of issuance of bond. | 1/16/86 |
| 4. Date of maturity of bond. | Senior Notes due 1993; Senior Notes due 1996; Senior Debentures due 2006. |
| *5. Tangible net worth (including closure and post-closure cost estimates included in "total liabilities" on balance sheet. | \$1,788 |
| *6. Total assets in U.S. (required only if less than 90% of firm's assets are located in the U.S.) | \$5,748 |
| | <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"><u>YES</u></div> <div style="text-align: center;"><u>NO</u></div> </div> |
| 7. Is line 5 at least \$10 million? | X |
| 8. Is line 5 at least 6 times line 1? | X |
| *9. Are at least 90% of firm's assets located in the U.S.? If not, complete line 10. | X |
| 10. Is line 6 at least 6 times line 1? | X |

I hereby certify that, with the exceptions of paragraphs 1a and 3a, the wording of this letter is identical to the wording specified in paragraph (F) of rule 3745-55-51 of the Administrative Code as such regulations were constituted on the date shown immediately below.

May 16, 1989

Very truly yours,


J. Clayton Stephenson
Vice Chairman,
Chief Financial and
Administrative Officer

0676R

RF
CAB

KPMG Peat Marwick

Certified Public Accountants

Peat Marwick Main & Co.

One Plaza West
100 Mill Plain Road
Danbury, CT 06811

Telephone 203 743 6391

Telecopier 203 798 6870

The Board of Directors
Union Carbide Corporation:

We have audited, in accordance with generally accepted auditing standards, the consolidated balance sheet of Union Carbide Corporation and subsidiaries as of December 31, 1988 and the related consolidated statements of income, stockholders' equity and cash flows for the year then ended, and have issued our report thereon dated February 21, 1989.

In accordance with Subpart H of Title 40 CFR Parts 264 and 265 of the Code of Federal Regulations, we compared the data in Items 5, 6 and 9 of the letter from the Corporation's Chief Financial and Administrative Officer dated May 16, 1989 in support of the Corporation's use of the financial test to demonstrate financial assurance, as specified in such regulations, with the audited financial statements.

In connection with the procedures referred to in the paragraph above, no matters came to our attention that caused us to believe that the specified data should be adjusted.

We understand that this report is intended solely to assist you in evaluating the Corporation's adherence to the requirements of Subpart H of Title 40 CFR Parts 264 and 265 of the Code of Federal Regulations and should not be used for any other purpose.

Peat Marwick Main & Co.

May 12, 1989



UNION CARBIDE CORPORATION

39 OLD RIDGEBURY ROAD

DANBURY, CT 06817-0001

J. CLAYTON STEPHENSON

VICE CHAIRMAN

CORPORATE GUARANTEE FOR CLOSURE

AND

POST-CLOSURE CARE (OHIO)

Guarantee made this May 16, 1989 by Union Carbide Corporation, a business corporation organized under the laws of the State of New York, herein referred to as guarantor, to the Ohio Environmental Protection Agency, obligee, on behalf of our subsidiary UCAR Carbon Company Inc., of Lakewood, Ohio and Parma, Ohio.

Recitals

1. Guarantor meets or exceeds the financial test criteria and agrees to comply with the reporting requirements for guarantors as specified in Paragraph (F) of rules 3745-55-43 and 3745-55-45 of the Administrative Code or Paragraph (E) of rules 3745-66-43 and 3745-66-45 of the Administrative Code.
2. UCAR Carbon Company Inc., owns or operates the following hazardous waste management facilities covered by this guarantee:

| | |
|---------------|----------------------------|
| Name | - UCAR Carbon Company Inc. |
| Address | - Lakewood, Ohio |
| EPA # | - OH0004167383 |
| Ohio Permit # | - 02-18-0132 |
| Closure | - \$ 191,000 |
| Post-Closure | - \$ 0 |

| | |
|---------------|----------------------------|
| Name | - UCAR Carbon Company Inc. |
| Address | - Parma, Ohio |
| EPA # | - OHD003926748 |
| Ohio Permit # | - 02-18-0104 |
| Closure | - \$ 173,200 |
| Post-Closure | - \$ 0 |

3. "Closure plans" and "post-closure plans" as used below refer to the plans maintained as required by Chapters 3745-55 and 3745-66 of the Administrative Code for the closure and post closure care of facilities as identified above.

4. For value received from UCAR Carbon Company Inc., guarantor guarantees to Ohio EPA that in the event that UCAR Carbon Company Inc. fails to perform "closure and post-closure care" of the above facilities in accordance with the closure or post-closure plans and other permit or interim status requirements whenever required to do so, the guarantor shall do so or establish a trust fund as specified in Chapters 3745-55 and 3745-66 of the Administrative Code as applicable, in the name of UCAR Carbon Company Inc. in the amount of the current closure or post-closure cost estimates as specified in Chapters 3745-55 and 3745-66 of the Administrative Code.
5. Guarantor agrees that if, at the end of any fiscal year before termination of this guarantee, the guarantor fails to meet the financial test criteria, guarantor shall send within 90 days, by certified mail, notice to the Director, Ohio EPA and to UCAR Carbon Company Inc. that he intends to provide alternate financial assurance as specified in Chapters 3745-55 and 3745-66 of the Administrative Code as applicable, in the name of UCAR Carbon Company Inc. Within 120 days after the end of such fiscal year, the guarantor shall establish such financial assurance unless UCAR Carbon Company Inc. has done so.
6. The guarantor agrees to notify the Director by certified mail, of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming guarantor as debtor, within 10 days after commencement of the proceedings.
7. Guarantor agrees that within 30 days after notified by the Director of a determination that guarantor no longer meets the financial test criteria or that he is disallowed from continuing as a guarantor of closure or post-closure care, he shall establish alternate financial assurance as specified in Chapters 3745-55 or 3745-66 of the Administrative Code as applicable, in the name of UCAR Carbon Company Inc. or unless UCAR Carbon Company Inc. has done so.
8. Guarantor agrees to remain bound under this guarantee notwithstanding any or all of the following: amendment or modification of the closure or post-closure plan, amendment or modification of the permit, the extension or reduction of the time of performance of closure or post-closure, or any other modification or alteration of an obligation of the owner or operator pursuant to Chapters 3745-55 or 3745-66 of the Administrative Code.
9. Guarantor agrees to remain bound under the guarantee for so long as UCAR Carbon Company Inc. must comply with the applicable financial assurance requirements of Chapters 3745-55 or 3745-66 of the Administrative Code for the above-listed facilities, except that guarantor may cancel this guarantee by sending

notice by certified mail to the Director and to UCAR Carbon Company Inc. such cancellation to become effective no earlier than 120 days after receipt of such notice by both Ohio EPA and UCAR Carbon Company Inc. as evidenced by the return receipts.

10. Guarantor agrees that if UCAR Carbon Company Inc. fails to provide alternate financial assurance as specified in Chapters 3745-55 or 3745-66 of the Administrative Code as applicable, and obtain written approval of such assurance from the Director within 90 days after a notice of cancellation by the guarantor is received by the Director from guarantor, guarantor shall provide such alternate financial assurance in the name of UCAR Carbon Company Inc.
11. Guarantor expressly waives notice of acceptance of this guarantee by the Ohio EPA or by UCAR Carbon Company Inc. Guarantor also expressly waives notice of amendments or modifications of the closure and/or post-closure plan and of amendments or modifications of the facility permits.

I hereby certify that the wording of this guarantee is identical to the wording specified in Paragraph (H) of rule 3745-55-51 of the Administrative Code as such regulations were constituted on the date first above written.

Effective Date:
(Name of Guarantor):
(Authorized signature for
guarantor):
(Name of person signing):
(Title of person signing):

May 16, 1989
UNION CARBIDE CORP.

J. C. Stephenson
J. Clayton Stephenson
Vice Chairman,
Chief Financial and
Administrative Officer

Signature of witness or notary:

Diane E. Buckland

DIANE E. BUCKLAND
NOTARY PUBLIC
MY COMMISSION EXPIRES MARCH 31, 1991

RF
3/1

0708R



Certified Public Accountants

Peat Marwick Main & Co.

One Plaza West
100 Mill Plain Road
Danbury, CT 06811

Telephone 203 743 6391

Telecopier 203 798 6870

The Board of Directors
Union Carbide Corporation:

We have audited, in accordance with generally accepted auditing standards, the consolidated balance sheet of Union Carbide Corporation and subsidiaries as of December 31, 1988 and the related consolidated statements of income, stockholders' equity and cash flows for the year then ended, and have issued our report thereon dated February 21, 1989.

In accordance with Subpart H of Title 40 CFR Parts 264 and 265 of the Code of Federal Regulations, we compared the data in Items 5, 6 and 9 of the letter from the Corporation's Chief Financial and Administrative Officer dated May 16, 1989 in support of the Corporation's use of the financial test to demonstrate financial assurance, as specified in such regulations, with the audited financial statements.

In connection with the procedures referred to in the paragraph above, no matters came to our attention that caused us to believe that the specified data should be adjusted.

We understand that this report is intended solely to assist you in evaluating the Corporation's adherence to the requirements of Subpart H of Title 40 CFR Parts 264 and 265 of the Code of Federal Regulations and should not be used for any other purpose.

Peat Marwick Main & Co.

May 12, 1989



Member Firm of
Klynveld Peat Marwick Goerdeler

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the U.S. dollar. Partially offsetting these increases were increased selling, administrative and other expenses, primarily related to increased customer service and support. Selling, administrative and other expenses declined as a percent of sales.

Segment sales in 1986 remained about the same as in 1985. Lower domestic sales reflected an average 5% decline in selling prices across all major businesses. The price decline reflected lower hydrocarbon feedstock costs, which moved lower with oil prices. International sales increased moderately.

Operating profit in 1986 was \$446 million, compared to a \$316 million operating loss in 1985. The 1985 operating loss included \$553 million of unusual charges. Excluding unusual charges, operating profit rose 88% in 1986. Decreases in domestic raw material and energy costs more than offset the decline in product prices. In addition, during 1985 we shut down and wrote off surplus and high-cost capacity and implemented an early retirement program, which reduced 1986 plant operating costs, overhead costs and depreciation. Operating profit in 1986 included \$10 million from the sale of a distribution terminal in New Jersey.

| Dollar amounts in millions | 1988 | 1987 | 1986 |
|---|----------|----------|----------|
| Sales | \$ 5,525 | \$ 4,325 | \$ 3,730 |
| % of UCC consolidated | 66% | 63% | 59% |
| Operating profit | \$ 1,218 | \$ 545 | \$ 446 |
| % of UCC consolidated | 76% | 61% | 56% |
| Number of employees (year-end) | 16,362 | 17,108 | 16,759 |
| Employment costs (Wages, benefits, payroll taxes) | \$ 767 | \$ 744 | \$ 688 |

SEGMENT ANALYSIS: INDUSTRIAL GASES

Industrial Gases sales in 1988 were 12% greater than in 1987 and continued the upward trend of the past two years. The current year's increase was a result of increased sales in all geographic areas. Although domestic selling prices weakened in 1988, we had a banner year in terms of sales volume. Oxygen demand has revived as a result of increased demand from the steel industry, and nitrogen demand has benefited from the general strength in the U.S. economy. Sales have also received a boost from acquisitions of industrial gases distributors and by serving customers in a wider range of industries. Latin America, where sales rose 22% over 1987, accounts for the largest share of the segment's international sales. Double-digit sales gains were also recorded for all of our other international areas.

Operating profit in 1988 was \$324 million. Excluding a \$10 million charge in 1988 for impairment of assets related to an enhanced oil recovery project, operating profit in 1988 increased 2% to \$334 million. Although domestic operating results were lower, significant increases in operating profits in both Latin America and Canada boosted worldwide profits to the higher level. The gross margin ratio for the segment was level with the prior year, and selling, administrative and other

expenses as a percent of sales increased slightly. Other income-net was lower due to restructuring costs in the domestic packaged gases business.

Industrial Gases sales in 1987 expanded 6% over 1986, a result of higher sales in all international areas. Sales rose 26% in Latin America. Although domestic sales volume increased, total domestic sales declined due to price pressure in highly competitive markets.

Operating profit in 1987 was \$327 million, an increase of 11% over 1986. Positive international results were aided by improved operations and currency translation effects, particularly in Latin America. Domestic operating profit declined, again due primarily to pricing pressures.

Adjusted for the 1985 divestiture of the welding and cutting systems business, segment sales in 1986 increased 5% over 1985. Domestic sales were virtually unchanged, and international sales increased as a result of the strong demand in Latin America and Europe and the favorable effect of the lower U.S. dollar, especially in Europe.

Operating profit in 1986 was \$294 million, compared to \$228 million in 1985. The 1985 operating profit included unusual charges of \$76 million and a gain on the divestiture of the welding and cutting systems business of \$37 million. When compared with the prior year, before unusual charges and the non-recurring gain, segment operating profit in 1986 increased 10%, principally due to improved domestic operations that benefited from lower overhead costs.

| Dollar amounts in millions | 1988 | 1987 | 1986 |
|---|----------|----------|----------|
| Sales | \$ 2,076 | \$ 1,852 | \$ 1,741 |
| % of UCC consolidated | 25% | 27% | 27% |
| Operating profit | \$ 324 | \$ 327 | \$ 294 |
| % of UCC consolidated | 20% | 36% | 37% |
| Number of employees (year-end) | 20,100 | 19,032 | 19,232 |
| Employment costs (Wages, benefits, payroll taxes) | \$ 526 | \$ 492 | \$ 460 |

SEGMENT ANALYSIS: CARBON PRODUCTS

Increased demand for products in all of the segment's businesses drove sales higher in the current year by 13% over 1987 to the highest level of the last three years. Increased shipments were recorded in all major geographic areas, although sales to Eastern Europe were held back by customers' lack of hard currencies. Sales were also helped by the effect of the weaker U.S. dollar on currency trans-

the benefits arising from the Recapitalization Plan (see Note 4 on page 41). Interest expense almost doubled in 1986 versus the prior year mainly as a result of the interest incurred on debt securities issued to stockholders as a result of an Exchange Offer for common stock (see Note 3 on page 40).

PROVISION FOR INCOME TAXES AND STATEMENT OF FINANCIAL ACCOUNTING STANDARDS NO. 96, ACCOUNTING FOR INCOME TAXES (SFAS 96)

The effective tax rate for 1988 was 38.9%, which was higher than the 34.0% rate reported in 1987. The rate increase reflects the reversal of certain deferred income tax benefits established in prior years at higher tax rates, higher 1988 U.S. state and local taxes based on income, elimination of business tax credits and the impact of untaxed currency translation losses. The 1987 rate of 34.0% was lowered by adjustments related to 1986 sales of businesses and was higher than the 30.2% rate reported in 1986, mainly due to increased U.S. earnings taxed at the statutory rate and the reduction of business and research and experimentation tax credits.

SFAS 96 which, as issued, was to be effective for years beginning after December 15, 1988, significantly changes the accounting for income taxes. The new standard requires an asset and liability approach for financial accounting and reporting of income taxes. In December 1988, the Financial Accounting Standards Board (FASB) delayed the initial required adoption of SFAS 96 to fiscal years beginning after December 15, 1989. The delay will allow the FASB more time to consider implementation questions and provide additional time for preparers of financial statements to study this complex accounting standard. The Corporation plans to adopt SFAS 96 in 1990 (see Note 10 on page 42).

MINORITY INTEREST INCREASES IN 1988

Minority stockholders' share of income increased 60% in 1988 to \$64 million. A full year of dividends on preferred stock of Union Carbide Finance Corporation (see Note 7 on page 41) was included in minority share in 1988 compared with dividends for a partial year in 1987 (operations commenced in September 1987). Minority share also increased in 1988 as a result of higher income from operations of subsidiaries in Canada and Brazil. Minority share increased 25% in 1987 to \$40 million. Higher income from operations of subsidiaries in Brazil and dividends on preferred stock of Union Carbide Finance Corporation accounted for much of the increase. Minority share increased 45% in 1986, to \$32 million. Excluding the \$15 million impact of the 1985 unusual charges (resulting from a restructuring program), minority interest was 14% below that of 1985 due mainly to decreased results in Brazil.

INCOME FROM EQUITY COMPANIES MORE THAN DOUBLES

The Corporation's share of income of companies carried at equity in 1988 was \$37 million, well over twice our share of income in 1987. Substantially improved results from corporate joint ventures in

our core business groups in Mexico, Japan and Spain as well as excellent performance from KEMET Electronics Corporation, all contributed to this increase. The Corporation's share of income of companies carried at equity in 1987 was \$14 million, the same as in 1986. Improved earnings of Canadian affiliates and income from KEMET Electronics Corporation were offset by increased losses of an affiliate in Mexico. The amount earned in 1986 was down sharply from the \$27 million reported in 1985, mainly due to losses of an affiliate in Mexico.

LIQUIDITY, CAPITAL RESOURCES AND OTHER FINANCIAL DATA

CASH FLOW FROM OPERATIONS

Cash flow from operations in 1988 more than doubled from 1987 levels to \$932 million, largely as a result of improved income from operations partially offset by increases in accounts receivable and inventories related to the increased sales activity. As a result of settlement of the Bhopal litigation (see Note 22 on page 49), the Corporation paid \$420 million to the Government of India on February 24, 1989. The payment was funded through proceeds from drawdowns of existing standby credit facilities. It is anticipated that these borrowings will be reduced during 1989 by application of insurance proceeds as well as internally generated funds. On the same date and pursuant to the settlement, Union Carbide India Ltd., a non-consolidated subsidiary, paid the Government of India the rupee equivalent of \$45 million.

CASH FLOW USED FOR INVESTING

Cash flow used for investing includes capital expenditures and investments, offset by proceeds from the sale of assets and businesses. Net expenditures associated with investing activities increased to \$531 million from \$270 million in 1987, as a result of increased capital expenditures and the absence of proceeds from disposals and partial disposals of businesses.

Capital expenditures in 1988 totaled \$671 million, a 34% increase over 1987. Expenditures in 1987 and 1986 were \$502 million and \$524 million, respectively. Of these expenditures, approximately 45% were directed to new capacity, 40% to cost reduction and replacement, and 15% to environmental, safety and health facilities.

Approximately 70% of capital spending for the last three years was in the United States and Puerto Rico. The two projects that accounted for the largest capital expenditures during 1988 involved the reactivation of an olefins unit at Taft, La. and an upgrade of our vinyl acetate unit at Texas City, Tex.

SEGMENT DATA

INDUSTRY SEGMENTS (Millions of dollars)

| Sales | 1988 | 1987 | 1986 |
|------------------------|---------|---------|---------|
| Chemicals & Plastics | \$5,525 | \$4,325 | \$3,730 |
| Industrial Gases | 2,076 | 1,852 | 1,741 |
| Carbon Products | 723 | 638 | 609 |
| Other | — | 99 | 263 |
| Total UCC Consolidated | \$8,324 | \$6,914 | \$6,343 |
| Identifiable Assets | 1988 | 1987 | 1986 |
| Chemicals & Plastics | \$4,372 | \$3,884 | \$3,897 |
| Industrial Gases | 2,525 | 2,335 | 2,045 |
| Carbon Products | 863 | 817 | 749 |
| Other | 51 | 117 | 102 |
| Total UCC Consolidated | \$7,811 | \$7,153 | \$6,793 |
| Depreciation | 1988 | 1987 | 1986 |
| Chemicals & Plastics | \$ 247 | \$ 256 | \$ 243 |
| Industrial Gases | 178 | 164 | 154 |
| Carbon Products | 43 | 41 | 39 |
| Other | 5 | 2 | 17 |
| Total UCC Consolidated | \$ 473 | \$ 463 | \$ 453 |
| Operating Profit | 1988 | 1987 | 1986 |
| Chemicals & Plastics | \$1,218 | \$ 545 | \$ 446 |
| Industrial Gases | 324 | 327 | 294 |
| Carbon Products | 64 | 37 | 53 |
| Other | — | (14) | (2) |
| Total UCC Consolidated | \$1,606 | \$ 895 | \$ 791 |
| Capital Expenditures | 1988 | 1987 | 1986 |
| Chemicals & Plastics | \$ 372 | \$ 190 | \$ 225 |
| Industrial Gases | 247 | 272 | 231 |
| Carbon Products | 44 | 37 | 45 |
| Other | 8 | 3 | 23 |
| Total UCC Consolidated | \$ 671 | \$ 502 | \$ 524 |

GEOGRAPHIC SEGMENTS (Millions of dollars)

| Sales | 1988 | 1987 | 1986 |
|-----------------------------|---------|---------|---------|
| United States & Puerto Rico | \$5,758 | \$4,778 | \$4,555 |
| Canada | 429 | 298 | 241 |
| Europe | 929 | 876 | 747 |
| Latin America | 777 | 638 | 519 |
| Far East & Other | 431 | 324 | 281 |
| International Operations | 2,566 | 2,136 | 1,788 |
| Total UCC Consolidated | \$8,324 | \$6,914 | \$6,343 |
| Identifiable Assets | 1988 | 1987 | 1986 |
| United States & Puerto Rico | \$5,326 | \$4,820 | \$4,835 |
| Canada | 835 | 641 | 628 |
| Europe | 1,206 | 1,191 | 879 |
| Latin America | 821 | 748 | 758 |
| Far East & Other | 252 | 295 | 251 |
| International Operations | 3,114 | 2,875 | 2,516 |
| Inter-segment eliminations | (629) | (542) | (558) |
| Total UCC Consolidated | \$7,811 | \$7,153 | \$6,793 |
| Operating Profit | 1988 | 1987 | 1986 |
| United States & Puerto Rico | \$1,180 | \$ 600 | \$ 599 |
| Canada | 112 | 60 | 47 |
| Europe | 60 | 40 | 42 |
| Latin America | 241 | 179 | 98 |
| Far East & Other | 21 | 22 | 8 |
| International Operations | 434 | 291 | 195 |
| Inter-segment eliminations | (8) | 4 | (3) |
| Total UCC Consolidated | \$1,606 | \$ 895 | \$ 791 |

QUARTERLY DATA

| Millions of dollars | 1Q | 2Q | 3Q | 4Q | Year |
|---------------------|----------|----------|----------|------------------|----------|
| 1988 | | | | | |
| Net sales | \$ 1,947 | \$ 2,130 | \$ 2,108 | \$ 2,139 | \$ 8,324 |
| Cost of sales | 1,301 | 1,397 | 1,383 | 1,384 | 5,465 |
| Depreciation | 117 | 119 | 114 | 123 | 473 |
| Net income | 101 | 187 | 213 | 161 ^a | 662 |
| 1987 | | | | | |
| Net sales | \$ 1,681 | \$ 1,658 | \$ 1,730 | \$ 1,845 | \$ 6,914 |
| Cost of sales | 1,150 | 1,126 | 1,195 | 1,302 | 4,773 |
| Depreciation | 118 | 115 | 117 | 113 | 463 |
| Net income | 66 | 69 | 74 | 23 ^b | 232 |

| Dollars per share | 1Q | 2Q | 3Q | 4Q | Year |
|------------------------------------|---------|---------|---------|----------------------|---------|
| 1988 | | | | | |
| Primary net income per share | \$ 0.75 | \$ 1.39 | \$ 1.56 | \$ 1.17 ^a | \$ 4.88 |
| Fully diluted net income per share | 0.73 | 1.33 | 1.49 | 1.12 ^a | 4.66 |
| Dividends | 0.375 | 0.375 | 0.20 | 0.20 | 1.15 |
| Market price (high) ^c | 25.63 | 25.13 | 25.50 | 28.38 | 28.38 |
| Market price (low) ^c | 19.88 | 17.00 | 20.88 | 23.25 | 17.00 |
| 1987 | | | | | |
| Primary net income per share | \$ 0.51 | \$ 0.52 | \$ 0.57 | \$ 0.17 ^b | \$ 1.76 |
| Fully diluted net income per share | 0.51 | 0.51 | 0.55 | 0.17 ^b | 1.75 |
| Dividends | 0.375 | 0.375 | 0.375 | 0.375 | 1.50 |
| Market price (high) ^c | 30.13 | 32.50 | 31.38 | 32.13 | 32.50 |
| Market price (low) ^c | 22.63 | 26.75 | 26.75 | 15.50 | 15.50 |

^a Includes an after-tax charge of \$58 million, or \$0.43 per share primary, (\$0.40 per share fully diluted) associated with the settlement of Bhopal litigation (see Note 22 on page 48).

^b Includes a charge of \$53 million, or \$0.40 per share, from special litigation costs.

^c Prices are based on New York Stock Exchange composite transactions.

CONSOLIDATED STATEMENT OF INCOME
Union Carbide Corporation and Subsidiaries

| Millions of dollars (except per share figures), year ended December 31, | 1988 | 1987 | 1986 |
|---|-----------------|-----------------|-----------------|
| NET SALES | \$ 8,324 | \$ 6,914 | \$ 6,343 |
| Deductions (additions) | | | |
| Cost of sales, exclusive of depreciation shown separately below | 5,465 | 4,773 | 4,343 |
| Research and development | 159 | 159 | 148 |
| Selling, administrative, and other expenses | 822 | 779 | 740 |
| Depreciation | 473 | 463 | 453 |
| Interest on long-term and short-term debt | 401 | 383 | 543 |
| Other income—net | (124) | (34) | (96) |
| INCOME OF CONSOLIDATED COMPANIES BEFORE PROVISION FOR INCOME TAXES — CONTINUING OPERATIONS | 1,128 | 391 | 212 |
| Provision for income taxes | 439 | 133 | 64 |
| INCOME OF CONSOLIDATED COMPANIES — CONTINUING OPERATIONS | 689 | 258 | 148 |
| Less: Minority stockholders' share of income | 64 | 40 | 32 |
| Plus: UCC share of income of companies carried at equity | 37 | 14 | 14 |
| INCOME FROM CONTINUING OPERATIONS | 662 | 232 | 130 |
| Income from discontinued operations, net of income taxes and minority interest | — | — | 5 |
| | 662 | 232 | 135 |
| Gain on disposals, net of income taxes and minority interest | — | — | 564 |
| INCOME BEFORE EXTRAORDINARY CHARGE AND CUMULATIVE EFFECT OF CHANGE IN ACCOUNTING PRINCIPLE | 662 | 232 | 699 |
| Extraordinary charge | — | — | (473) |
| Cumulative effect of change in accounting principle for reversion of surplus pension funds | — | — | 270 |
| NET INCOME | \$ 662 | \$ 232 | \$ 496 |
| EARNINGS PER SHARE | | | |
| PRIMARY | | | |
| Income from continuing operations | \$ 4.88 | \$ 1.76 | \$ 1.25 |
| Income from discontinued operations | — | — | 0.05 |
| Gain from disposals of discontinued operations | — | — | 5.44 |
| Income before extraordinary charge and cumulative effect of change in accounting principle | 4.88 | 1.76 | 6.74 |
| Extraordinary charge | — | — | (4.56) |
| Cumulative effect of change in accounting principle | — | — | 2.60 |
| Net income | \$ 4.88 | \$ 1.76 | \$ 4.78 |
| FULLY DILUTED | | | |
| Income from continuing operations | \$ 4.66 | \$ 1.75 | \$ 1.24 |
| Income from discontinued operations | — | — | 0.05 |
| Gain from disposals of discontinued operations | — | — | 5.40 |
| Income before extraordinary charge and cumulative effect of change in accounting principle | 4.66 | 1.75 | 6.69 |
| Extraordinary charge | — | — | (4.53) |
| Cumulative effect of change in accounting principle | — | — | 2.59 |
| Net income | \$ 4.66 | \$ 1.75 | \$ 4.75 |
| DIVIDENDS DECLARED PER SHARE | \$ 1.15 | \$ 1.50 | \$ 1.50 |

The Notes to Financial Statements on pages 39 through 49 should be read in conjunction with this statement.

CONSOLIDATED STATEMENT OF CASH FLOWS

Union Carbide Corporation and Subsidiaries

Increase (Decrease) in Cash and Cash Equivalents

Millions of dollars, year ended December 31,

| | 1988 | 1987 | 1986 |
|--|--------------------|--------------------|--------------------|
| OPERATIONS | | | |
| Income from continuing operations | \$ 662 | \$ 232 | \$ 130 |
| Non-cash charges (credits) to net income | | | |
| Depreciation | 473 | 463 | 453 |
| Deferred income taxes | 127 | (47) | 115 ^c |
| Other non-cash charges (credits) | (33) | 26 | (2) |
| Investing credits to net income | (24) | (52) | (21) |
| Working capital ^a | 137 ^d | (284) ^b | 81 ^c |
| Long-term assets and liabilities | (410) ^d | 123 ^b | 127 ^c |
| Cash flow from operations | 932 | 461 | 883 |
| INVESTING | | | |
| Capital expenditures | (671) | (502) | (524) |
| Investments | (79) | (120) | (29) |
| Redemption/sale of assets | 219 | 167 ^b | 97 ^c |
| Discontinued operations and disposals | — | 185 | 2,820 |
| Cash flow from (used for) investing | (531) | (270) | 2,364 |
| FINANCING | | | |
| Short-term debt | 62 | (114) | (437) |
| Net borrowings-UCC bank credit agreements | (27) | (1,050) | 1,125 |
| Other long-term borrowings | 530 | 1,392 | 1,252 |
| Preferred stock issued by a consolidated subsidiary | — | 244 | — |
| Issuance of common stock | 108 | 78 | 736 |
| Long-term debt reductions | (941) | (579) | (4,067) |
| Minority transactions and other | (15) | (58) | (9) |
| Repurchase of common stock | — | — | (781) ^c |
| Special cash distribution | — | — | (1,053) |
| Cash dividends | (155) | (195) | (144) |
| Cash flow from (used for) financing | (438) | (282) | (3,378) |
| Effect of exchange rate changes on cash and cash equivalents | (18) | (7) | — |
| Change in cash and cash equivalents | (55) | (98) | (131) |
| Cash and cash equivalents beginning-of-year | 201 | 299 | 430 |
| Cash and cash equivalents end-of-year | \$ 146 | \$ 201 | \$ 299 |

^a Net change in working capital by component (excluding cash and cash equivalents, deferred income taxes, short-term debt and net assets of discontinued businesses):

| | 1988 | 1987 | 1986 |
|---------------------------------------|-----------------------|-----------------------|----------------------|
| (Increase) decrease in current assets | | | |
| Notes and accounts receivable | \$ (215) ^d | \$ (249) ^b | \$ (73) ^c |
| Inventories | (246) ^d | (132) ^b | 85 |
| Prepaid expenses | (1) ^d | (14) ^b | (8) ^c |
| Increase in payables and accruals | 599 ^d | 111 ^b | 77 |
| Working capital | \$ 137 | \$ (284) | \$ 81 |

^b Exclusive of amounts related to Linde Homecare Medical Systems, Inc. and the electronic capacitor business, which are reported in *Discontinued operations and disposals*.

^c Exclusive of amounts related to the sale of the Danbury Headquarters and Tarrytown properties which are reported in *Discontinued operations and disposals*.

^d Exclusive of amounts related to businesses exchanged for equity positions in two joint ventures.

^e Net of \$2,557 million long-term debt issued under the Exchange Offer.

The Notes to Financial Statements on pages 39 through 49 should be read in conjunction with this statement.

NOTES TO FINANCIAL STATEMENTS

INDEX

The subjects covered by the Notes to Financial Statements are found on the following pages:

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1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

PRINCIPLES OF CONSOLIDATION—The consolidated financial statements include the accounts of all significant subsidiaries except Union Carbide India Limited and two subsidiaries in Zimbabwe, which are included in *Other investments and advances*. All significant intercompany transactions have been eliminated in consolidation. Investments in significant companies 20% to 50% owned and partnerships are carried at equity in net assets. In the *Consolidated Statement of Income*, Union Carbide's share of the net income of the 20% to 50% owned companies is reported under the caption "UCC share of income of companies carried at equity" and partnership income is included in *Other income-net*. Other investments are carried generally at cost or less.

FOREIGN CURRENCY TRANSLATION—Except for Latin America, unrealized gains and losses resulting from translating foreign subsidiaries' assets and liabilities into U.S. dollars are accumulated in an equity account on the balance sheet until such time as the subsidiary is sold or substantially or completely liquidated. Translation gains and losses relating to operations of subsidiaries in Latin America, where hyperinflation exists, are included in the income statement.

CONSOLIDATED STATEMENT OF CASH FLOWS—In the fourth quarter of 1988, the Corporation adopted Statement of Financial Accounting Standards No. 95, Statement of Cash Flows (SFAS 95) which requires a statement of cash flows in place of a statement of changes in financial position. Pre-

viously reported statements of changes in financial position for 1987 and 1986 have been restated to conform with the 1988 presentation.

CASH EQUIVALENTS—The Corporation considers cash equivalents to be all highly liquid investments that are readily convertible to known amounts of cash and so near their maturity that they present insignificant risk of changes in value because of changes in interest rates.

INVENTORIES—Inventories are stated at cost or market, whichever is lower. These amounts do not include depreciation, the impact of which is not significant to the financial statements. Cost is determined generally on the "last-in, first-out" (LIFO) method for North American companies. The "average cost" method is used by most other subsidiaries.

Approximately 53% of inventory amounts before application of the LIFO method at December 31, 1988 (56% at December 31, 1987), has been valued on the LIFO basis. It is estimated that if inventories had been valued at current costs, they would have been approximately \$445 million and \$382 million higher than reported at December 31, 1988, and December 31, 1987, respectively.

Reduction of certain inventory quantities in 1986 (principally domestic chemicals and plastics and carbon products inventories) resulted in a liquidation of LIFO inventory quantities acquired at lower costs prevailing in prior years. This liquidation reduced cost of sales by \$42 million and increased net income by \$22 million.

FIXED ASSETS AND DEPRECIATION—Fixed assets are carried at cost. Expenditures for replacements are capitalized and the replaced items are retired. Gains and losses from the sale of property are included in income.

Depreciation is calculated on a straight-line basis. The Corporation and its subsidiaries generally use accelerated depreciation methods for tax purposes where appropriate.

PATENTS, TRADEMARKS, AND GOODWILL—Amounts paid for purchased patents and newly acquired subsidiaries in excess of the fair value of the net assets of such subsidiaries have been charged to patents, trademarks, and goodwill. The portion of such amounts determined to be attributable to patents is amortized over their remaining lives, while trademarks and goodwill are amortized over the estimated period of benefit, generally five to forty years.

RESEARCH AND DEVELOPMENT—Research and development costs are charged to expense as incurred. Depreciation expense applicable to research and development facilities and equipment is included in *Depreciation* in the income statement (\$13 million in 1988 and 1987 and \$11 million in 1986).

class have agreed to the entry of a judgment relinquishing all claims the class members may have against the Corporation, the directors and officers who are also named as defendants and Morgan Stanley & Co. Incorporated, as a result of the sale of the consumer products businesses and the distribution of the proceeds. In addition, all future obligations to class members under the rights will be terminated.

4. RECAPITALIZATION PLAN

During 1987, the Corporation completed a recapitalization plan (the "Recapitalization Plan") begun in November 1986, which reduced the Corporation's debt and interest expense and increased operating and financial flexibility. The plan involved in part (i) an offer (the "Debt Tender Offer") to purchase for cash all outstanding debt securities issued to shareholders pursuant to the January 1986 Exchange Offer (the "Securities"), (ii) consummation of a bank credit agreement (the "Bank Credit Agreement") and bridge loan facility to fund Security purchases, and (iii) sales of assets and the public and private sale of long-term debt and equity securities to repay borrowings under the Bank Credit Agreement and the bridge loan facility.

In connection with the Debt Tender Offer, which expired in December 1986, the Corporation repurchased \$2.456 billion, or 96% of the then outstanding Securities, for an aggregate purchase price of \$2.976 billion. In 1986, the Corporation recognized an after-tax extraordinary charge of \$473 million, representing the excess of the purchase price of the Securities over their carrying amount plus estimated related expenses of \$63 million less estimated tax benefits of \$109 million (see Note 8).

Funds required to finance the Securities purchases were provided by borrowings of \$2 billion under the Bank Credit Agreement and \$976 million under a bridge loan facility. Proceeds from sale of the Corporation's agricultural products business (see Note 2), sale/leaseback of the Corporation's Danbury headquarters (see Note 5), sale of common stock (see Note 18) and sale of \$200 million of long-term debt were applied to reduce borrowings under the Bank Credit Agreement and bridge facility to \$1.125 billion and \$125 million, respectively, at December 31, 1986. In 1987, these borrowings were repaid with proceeds from transfer of the Corporation's electronic capacitor business (see Note 6), sale of receivables to Union Carbide Finance Corporation (see Note 7) and sales of long-term debt as well as from internally generated funds.

5. SALE/LEASEBACK OF DANBURY HEADQUARTERS

In December 1986, the Corporation completed the sale of its Danbury headquarters building and 650-acre headquarters site and signed an agreement for

the leaseback of the headquarters building. The sale price was \$340 million, including cash proceeds of \$300 million. A pre-tax gain of \$98 million is being recognized over approximately 20 years, principally as a reduction to rent expense payable pursuant to the leaseback agreement.

6. TRANSFER OF ELECTRONIC CAPACITOR BUSINESS

In April 1987, the Corporation completed the transfer of its electronic capacitor business to KEMET Electronics Corporation, a new corporation formed by the business's management and owned 50% by the Corporation. The Corporation received \$150 million and recognized no gain or loss from the transaction.

7. UNION CARBIDE FINANCE CORPORATION

Union Carbide Finance Corporation ("Finance"), a wholly-owned consolidated subsidiary of the Corporation, purchases trade receivables from the Corporation at a discount on a revolving basis. Finance made its initial purchase of trade receivables in 1987, using proceeds from an offering to the public of \$249 million of asset-backed short-term auction rate cumulative preferred stock, which has been recorded in minority stockholders' equity. The average dividend rate for 1988 was 6.1% (6.0% for 1987).

The Corporation applied a substantial portion of the proceeds from the initial sale of receivables to Finance against borrowings under the Bank Credit Agreement (see Note 4).

8. 1986 EXTRAORDINARY CHARGE

As a result of the premium paid and expenses incurred in connection with the purchase of Securities pursuant to the Debt Tender Offer (see Note 4), 1986 net income included an extraordinary charge of \$473 million (after applicable tax benefits of \$109 million), or \$4.56 primary earnings per share (\$4.53 fully diluted earnings per share).

9. SEGMENT INFORMATION

Audited industry and geographic segment data are presented in Segment Data on page 31.

Union Carbide's businesses and products are described on pages 10 and 11 and on pages 20 through 24.

The following is a summary of the U.S. and Non-U.S. components of *Income of consolidated companies before provision for income taxes—continuing operations*:

| Millions of dollars | 1988 | 1987 | 1986 |
|---|---------|-------|-------|
| Income of consolidated companies before provision for income taxes—continuing operations: | | | |
| U.S. | \$ 792 | \$215 | \$ 60 |
| Non-U.S. (includes Puerto Rico) | 336 | 176 | 152 |
| | \$1,128 | \$391 | \$212 |

The Corporation provides for taxes on undistributed earnings of affiliates included in consolidated retained earnings to the extent that such earnings are planned to be remitted and not reinvested indefinitely. Undistributed earnings of affiliates intended to be reinvested indefinitely amounted to \$1.1 billion at December 31, 1988.

11. OTHER INCOME-NET

The following is an analysis of *Other income-net*:

| Millions of dollars | 1988 | 1987 | 1986 |
|---|-----------------|-------|-------|
| Investment income (principally from short-term investments) | \$ 69 | \$ 47 | \$ 38 |
| Foreign currency adjustments | 23 | 10 | 5 |
| Special litigation costs ^a | (48) | (65) | — |
| Sales and disposals of businesses and other assets ^b | 33 | 19 | 25 |
| Partnership income | 96 ^c | 15 | 10 |
| Other ^d | (49) | 8 | 18 |
| | \$ 124 | \$ 34 | \$ 96 |

^a Represents accruals to cover reserves for litigation contingencies, including product liability, patents, trade regulation, and the Bhopal settlement (see Note 22).

^b Includes for 1988 a gain of \$20 million from sales of securities by Canadian subsidiaries. Includes for 1986 a gain of \$10 million from the sale of a distribution terminal in New Jersey.

^c Includes \$62 million income from Petromont and Company, Limited, a partnership interest of a Canadian subsidiary.

^d Includes for 1988 a \$13 million charge for impairment of assets related to a Canadian film products business and a \$10 million charge for impairment of assets related to an enhanced oil recovery project. Includes for 1987 a \$14 million write-down of Canadian subsidiaries' investments in securities. Additionally, interest income and other miscellaneous income and expense items are included in the amounts for all years presented.

12. SUPPLEMENTARY BALANCE SHEET DETAIL

| Millions of dollars at December 31, | 1988 | 1987 |
|---|----------|---------|
| Notes and accounts receivable | | |
| Trade ^a | \$1,241 | \$1,110 |
| Other | 213 | 249 |
| | 1,454 | 1,359 |
| Less: Allowance for doubtful accounts | 41 | 65 |
| | \$1,413 | \$1,294 |
| Fixed assets | | |
| Land and improvements | \$ 415 | \$ 410 |
| Buildings | 762 | 745 |
| Machinery and equipment | 7,361 | 7,119 |
| Construction in progress and other | 471 | 365 |
| | \$9,009 | \$8,639 |
| Other assets | | |
| Deferred charges | \$ 172 | \$ 160 |
| Long-term receivables | 99 | 104 |
| Patents, trademarks and goodwill | 52 | 72 |
| | \$ 323 | \$ 336 |
| Other accrued liabilities | | |
| Accrued accounts payable | \$ 404 | \$ 350 |
| Payrolls | 111 | 102 |
| Bhopal settlement accrual | 237 | — |
| Other | 292 | 295 |
| | \$1,044 | \$ 747 |
| Other long-term obligations | | |
| Accrued pension cost | \$ 41 | \$ 124 |
| Bhopal accrual | — | 189 |
| Other | 314 | 257 |
| | \$ 355 | \$ 570 |
| Deferred credits | | |
| Income taxes ^b | \$ 732 | \$ 596 |
| Deferred gain on sales of the Danbury Headquarters and Tarrytown properties | 128 | 140 |
| Other | 55 | 94 |
| | \$ 915 | \$ 830 |
| Equity adjustment from foreign currency translation (by geographic area) | | |
| Canada | \$ (27) | \$ (42) |
| Europe | (62) | (14) |
| Far East & Other | (17) | (19) |
| | \$ (106) | \$ (75) |

^a Union Carbide sold certain receivables with recourse to various banks for proceeds of \$415 million in 1988, \$801 million in 1987 and \$615 million in 1986. At December 31, 1988, approximately \$65 million remains uncollected (\$71 million in 1987). Of the 1988 amount, \$27 million is included in contingent obligations (\$45 million in 1987). See Note 22.

^b Deferred income taxes related to current items are included in *Prepaid expenses* in the amount of \$172 million in 1988 (\$112 million in 1987).

16. LONG-TERM DEBT

| Millions of dollars at December 31, | 1988 | 1987 |
|---|---------|---------|
| <i>Union Carbide Corporation</i> | | |
| 5.30% Sinking Fund Debentures, with equal annual sinking fund payments to 1997 | \$ 112 | \$ 125 |
| 7.50% Sinking Fund Debentures due 2006, issued at a discount (effective rate 7.55%) with annual sinking fund payments, 1989 to 2005 | 183 | 191 |
| 7.50% Convertible Subordinated Debentures due 2012, convertible into common stock at \$35.50 per share | 345 | 345 |
| 8.50% Sinking Fund Debentures due 2005, with annual sinking fund payments, 1989 to 2004 | 263 | 275 |
| 8.60% Senior Notes due 1989 | 95 | 95 |
| 9.10% Senior Notes due 1990 | 105 | 105 |
| 9.35% Sinking Fund Debentures due 2009, with annual sinking fund payments, 1990 to 2008 | 200 | 200 |
| 9.35% Senior Notes due 1992 | 150 | 150 |
| 9.75% Senior Subordinated Notes due 1994 | 350 | 350 |
| 13.25% Senior Notes due 1993, issued at a discount (effective rate 13.79%) | 64 | 64 |
| 14.25% Senior Notes due 1996 issued at a premium (effective rate 13.98%) | 19 | 19 |
| 14.50% Notes due 1991, issued at a discount (effective rate 14.69%) | - | 150 |
| 15.00% Senior Debentures due 2006, issued at a premium (effective rate 14.32%) | 17 | 18 |
| Borrowings under bank credit agreements | 39 | 75 |
| Pollution control and other facility obligations | 178 | 183 |
| Obligations under capital leases | 38 | 41 |
| Other debt | 4 | 5 |
| <i>Domestic subsidiaries</i> | | |
| Borrowings at various maturities and interest rates | 14 | 17 |
| <i>International subsidiaries</i> | | |
| Canadian Dollar loans and obligations due in varying installments through 1993 with interest at 8.38% to 16.00% | 160 | 149 |
| Canadian Dollar sale and leaseback financing due 2017, subject to redemption at holders' option in September 1992 | 105 | 96 |
| Borrowings under Electric Furnace Products Company Ltd. Credit Agreement | 37 | 200 |
| Obligations under capital leases | 60 | 43 |
| Other debt-various maturities and interest rates | 142 | 180 |
| | 2,680 | 3,086 |
| Less: Bonds held for sinking fund | 193 | 170 |
| | 2,487 | 2,916 |
| Less: Payments due within one year | 192 | 53 |
| | \$2,295 | \$2,863 |

In the fourth quarter of 1988, the Corporation exercised its call provision and redeemed at par value all \$150 million of the 14.50% Notes due 1991.

The Corporation has bank credit agreements totalling \$850 million, of which \$350 million is committed until December 15, 1990 and \$500 million until October 31, 1990. Under the agreements, options are available to borrow on a revolving basis at various rates. The effective interest rate on borrowings under the agreements in 1988 was approximately 6.64% (7.93% in 1987 and 7.88% in 1986).

Electric Furnace Products Company Limited, a wholly-owned Canadian subsidiary of Union Carbide, has a credit agreement under which \$200 million could have been borrowed through December 1987 and \$154 million could have been borrowed through December 1988, with declining amounts available until January 1994. Under the agreement, options are available to borrow at various rates. This facility is guaranteed by the Corporation. The effective interest rate on borrowings was approximately 8.50% in 1988 (8.58% in 1987).

The above bank credit agreements and the indentures for debt issued in the Exchange Offer (see Note 3) and the Recapitalization Plan (see Note 4) contain various restrictive covenants. These covenants, among other things, restrict the ability of the Corporation and its subsidiaries to merge with another entity, incur or guarantee debt, create liens against assets, make or acquire investments, sell or transfer certain assets, increase dividends above a specified amount or make other distributions beyond certain limits with respect to the Corporation's capital stock, sell shares of a subsidiary's capital stock or issue preferred stock of a subsidiary. Also, the bank credit agreements require the Corporation to maintain certain consolidated financial ratios, including leverage, cash flow, and interest coverage. Events of default include certain changes in the control of the Corporation. In addition, should a material adverse development in any litigation occur, which could materially affect the ability of the Corporation to perform its obligations under the bank credit agreements and certain of the indentures, the Corporation may be required to prepay the indebtedness under such agreements and indentures.

20. RETIREMENT PROGRAMS

The noncontributory defined benefit retirement program of Union Carbide Corporation ("U.S. Retirement Program") covers substantially all U.S. employees and certain employees in other countries. Pension benefits are based primarily on years of service and compensation levels prior to retirement.

Pension coverage for employees of the Corporation's non-U.S. consolidated subsidiaries is provided, to the extent deemed appropriate, through separate plans. Obligations under such plans are systematically provided for by depositing funds with trustees, under insurance policies, or by book reserves.

In 1986, the Corporation adopted SFAS 87 for the U.S. Retirement Program. During 1988, SFAS 87 was adopted for the non-U.S. plans. Prior year pension amounts have not been restated for this change. The effect of adopting SFAS 87 for non-U.S. plans was to reduce 1988 net pension cost by \$9 million.

U.S. Retirement Program net pension cost associated with continuing operations amounted to \$34 million in 1988, \$28 million in 1987 and \$19 million in 1986. Net pension cost for non-U.S. plans in 1988 amounted to \$2 million. Pension costs of non-U.S. plans in 1987 and 1986 amounted to \$14 million and \$15 million, respectively.

The components of continuing operations net pension cost for the U.S. Retirement Program and non-U.S. plans in 1988 and for the U.S. Retirement Program in 1987 and 1986 are as follows:

| Millions of dollars | 1988 | 1987 | 1986 |
|--|---------|-------|---------|
| Service cost—benefits earned during the period | \$ 72 | \$ 61 | \$ 53 |
| Interest cost on projected benefit obligation | 170 | 129 | 122 |
| Return on plan assets—actual | \$(225) | \$ 20 | \$(311) |
| —unrecognized return | 31 | (175) | 167 |
| Amortization of net gain | (12) | (7) | (12) |
| Net pension cost | \$ 36 | \$ 28 | \$ 19 |

The funded status of the U.S. Retirement Program and non-U.S. plans in 1988 and the U.S. Retirement Program in 1987 was as follows:

| Millions of dollars at December 31, | 1988 | 1987 |
|---|-----------|-----------|
| Actuarial present value of plan benefits: | | |
| Accumulated benefit obligation, including vested benefits of \$1,578 million at December 31, 1988, and \$1,231 million at December 31, 1987 | \$(1,636) | \$(1,279) |
| Projected benefit obligation | \$(2,100) | \$(1,650) |
| Fair value of plan assets, primarily invested in common stocks and fixed income securities | \$ 2,078 | \$ 1,628 |
| Excess of projected benefit obligation over plan assets | \$ (22) | \$ (22) |
| Unamortized net asset at transition | (187) | (169) |
| Unamortized prior service cost | 52 | 42 |
| Unrecognized (gains) and losses—net | 51 | 25 |
| Accrued pension cost | \$ (106) | \$ (124) |

The actuarial assumptions used were as follows:

| | 1988 | 1987 |
|--|-------|-------|
| Discount rate for determining projected benefit obligation | 9.0% | 9.0% |
| Rate of increase in compensation levels | 7.0% | 7.0% |
| Expected long-term rate of return on plan assets | 10.0% | 10.0% |

In connection with the initial application of SFAS 87 and companion requirements, a deferred credit of \$500 million related to the 1985 reversion of surplus pension funds, less applicable taxes of \$230 million, was recognized as a non-recurring credit in the 1986 Consolidated Statement of Income under the caption "Cumulative Effect of Change in Accounting Principle for Reversion of Surplus Pension Funds."

Union Carbide Corporation and certain of its consolidated subsidiaries provide health care and life insurance benefits for eligible retired employees. These benefits are provided through various insurance companies and health care providers. The annual insurance premiums, which are based on the benefits paid during the year, are generally expensed as incurred. Total expenses for 1988 amounted to \$28 million (\$29 million in 1987 and \$26 million in 1986). Substantially all of these expenses related to domestic operations.

22. COMMITMENTS AND CONTINGENCIES

At December 31, 1988, the Corporation and its consolidated subsidiaries had contingent obligations of \$451 million, principally for purchase and sale commitments related to the ordinary conduct of business and guarantees of outstanding loans and notes payable by others. It is not expected that these contingent obligations will have a material adverse effect on the consolidated financial position of the Corporation.

On February 14, 1989, the Supreme Court of India ordered a \$470 million final settlement of all litigation with respect to the December 3, 1984 methyl isocyanate gas release at the Union Carbide India Limited ("UCIL") plant at Bhopal, India. The Corporation is a 50.9% shareholder of UCIL. The Union of India and Union Carbide Corporation accepted the Court's order. The Court stated that its order was just, equitable and reasonable based on the facts and circumstances of the case, including the pleadings, the data placed before the Court, the proceedings in the litigation in the United States, the settlement offers and counter-offers made by the parties, the complex issues of law and fact, the enormity of human suffering and the pressing urgency to provide immediate and substantial relief to the victims. The Court also quashed all criminal proceedings related to the gas release. Although the civil suit was filed by the Union of India against the Corporation alone, on February 15, 1989 the Supreme Court of India made UCIL a party to the suit. The Court directed that the Corporation pay \$425 million of the settlement and that UCIL pay the Rupee equivalent of \$45 million. The \$5 million payment previously made by the Corporation to the Red Cross at the suggestion of U.S. Judge John F. Keenan was credited to the Corporation, leaving a balance due of \$420 million. The Court specified that the \$470 million total be paid by March 23, 1989 to the Union of India for the benefit of all the victims of the gas release under the Bhopal Gas Leak Disaster (Processing of Claims) Act. Effective upon full payment of the settlement, the Court discharged the previous undertaking of the Corporation in the District Court at Bhopal to maintain

unencumbered assets having a fair market value of \$3 billion. The Supreme Court proceedings also provide that the accused in the criminal proceedings are deemed acquitted.

At the time the settlement occurred, all of the suits that were brought in the United States with respect to the gas release had been dismissed, except a civil suit in the state court in Connecticut. The settlement will be placed before the Connecticut court. Also, plaintiffs in a civil suit in the state court in Texas that was dismissed have attempted to appeal the dismissal. If the appellate process proceeds, the settlement will be placed before the appellate court.

The Corporation's accrued liability for the Bhopal litigation as of December 31, 1988, has been adjusted based upon the settlement resulting in a fourth quarter charge to *Other income-net* of \$48 million (\$58 million after tax or \$0.43 per share primary). At year-end 1988, the balance of the accrued liability was increased to \$237 million, after giving effect to anticipated proceeds of insurance and remaining expenses of the litigation.

In addition to the above, the Corporation and its consolidated subsidiaries are involved in a number of legal proceedings and claims with both private and governmental parties. These cover a wide range of matters including, but not limited to: trade regulation; product liability; utility regulation; Federal regulatory proceedings; health, safety, and environmental matters; patents and trademarks; contracts; taxes; and stockholder, rights-holder and debentureholder claims. In some of these cases, the remedies that may be sought or damages claimed are substantial.

While it is impossible at this time to determine with certainty the ultimate outcome of the litigation referred to in this note, management believes that adequate provisions have been made for probable losses with respect thereto and that such ultimate outcome, after provisions therefor, will not have a material adverse effect on the consolidated financial position of the Corporation. Should any losses be sustained in connection with any of the matters referred to in this note, in excess of provisions therefor, they will be charged to income in the future.

UNION CARBIDE CORPORATION
39 OLD RIDGEBURY ROAD
DANBURY, CT 06817-0001

J. CLAYTON STEPHENSON
VICE CHAIRMAN

RECEIVED
MAY 31 1989
U.S. EPA, REGION V
WASTE MANAGEMENT DIVISION
OFFICE OF THE DIRECTOR

O: WMD-
CC: RF
C.M. 613689351

May 16, 1989

CERTIFIED MAIL

Regional Administrator
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: Demonstration of Financial Assurance
for Closure and/or Post-Closure Care

Dear Sir or Madam:

I am the chief financial officer of Union Carbide Corporation, 39 Old Ridgebury Road, Danbury, CT 06817-0001. This letter is in support of the firm's establishment of state-required financial mechanisms for financial assurance for closure and/or post-closure care.

Evidence of establishment of the mechanism for the facilities listed below is enclosed herein:

| | |
|---------------|-----------------------------|
| Name | - UCAR Carbon Company, Inc. |
| Address | - Lakewood, Ohio |
| EPA # | - OH0004167383 |
| Ohio Permit # | - 02-18-0132 |
| Closure | - \$ 191,000 |
| Post-Closure | - \$ 0 |

| | |
|---------------|-----------------------------|
| Name | - UCAR Carbon Company, Inc. |
| Address | - Parma, Ohio |
| EPA # | - OHD003926748 |
| Ohio Permit # | - 02-18-0104 |
| Closure | - \$ 173,200 |
| Post-Closure | - \$ 0 |

RECEIVED

MAY 30 1989

U. S. EPA REGION 5
OFFICE OF REGIONAL ADMINISTRATOR

Name - L-Tec Company
Address - Ashtabula, Ohio
EPA # - OH0000821454
Ohio Permit # - 02-04-0404
Closure - \$ 500,000
Post-Closure - \$ 550,000

Pursuant to the requirements of 40 CFR Parts 264.149(a) and 265.149(a), this firm requests that the state-required mechanism be considered acceptable for meeting the requirements of Subpart H of 40 CFR Part 264 and 265.

Very truly yours,

J. C. Stephenson

J. Clayton Stephenson
Vice Chairman,
Chief Financial and
Administrative Officer

0735R

cc: Director

Ohio Environmental Protection Agency
RCRA Enforcement Section
Division of Solid & Hazardous Waste Management
P. O. Box 1049
1800 Water Mark Drive
Colombus, OH 43266-0419

RF
icb



State Of Ohio Environmental Protection Agency

P.O. Box 1049, 361 East Broad St., Columbus, Ohio 43216-1049
(466-8565



Richard F. Celeste, Governor

RE: **Union Carbide Corporation**

OHD 004167219

OHD 004167383

OHD 003926748

OHD 077479467

OHD 000821454

Mr. H. M. Parker
Assistant Director,
Environmental Affairs
Union Carbide Corporation
Old Ridgebury Road
Danbury, Connecticut 06817

July 28, 1986

Dear Mr. Parker:

I hereby acknowledge the receipt of a 1986 financial test demonstration. Ohio EPA has completed its review of Union Carbide's 1986 RCRA financial test submission. Union Carbide appears to adequately meet the financial test criteria at this time. Consequently, the facilities referenced above are in compliance with Ohio's financial responsibility rules for closure.

If you have any questions, please contact me at
(614) 462-8949.

Sincerely,

Edward A. Kitchen
Surveillance & Enforcement Section
Division of Solid & Hazardous
Waste Management

cc: Dave Sholtis, DSHWM
Albert R. Fritz, Union Carbide
D. A. Miekowski, Union Carbide
Edwin E. Frye, Union Carbide
R. L. Johnson, Union Carbide
R. C. Hazelton, Union Carbide
Dave Wertz, NEDO
Ben Chambers, NWDO
Steve Hamlin, SEDO

Marsh & McLennan, Incorporated
1221 Avenue of the Americas
New York, New York 10020
Telephone 212 997-2000

February 27, 1986

RECEIVED

FEB 28 1986

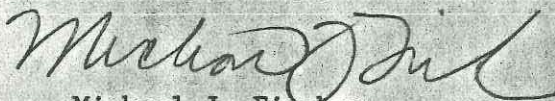
To Whom it May Concern:

Re: Union Carbide Corporation
Pollution Liability Insurance

We are pleased to enclose a Hazardous Waste Facility Liability Certificate in accordance with EPA regulations.

This certificate replaces the certificate on file with American Motorists which expired January 1, 1986.

Sincerely,



Michael J. Fischer
Assistant Vice President

MJF/sp

U.S. EPA
WASTE MANAGEMENT
OFFICE OF

Hazardous Waste Facility Certificate of Pollution Liability Insurance

1. Continental Insurance Company, (the "Insurer"), of 180 Maiden Lane, New York, New York 10038 hereby certifies that it has issued pollution liability insurance covering bodily injury and property damage to Union Carbide Corporation, (the "insured"), of Old Ridgebury Road, Danbury, CT 06817 in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at:

| <u>Location Name</u> | <u>Address</u> | <u>EPA I.D. #</u> |
|---|--|----------------------|
| Films Packaging Division | Town Street Fostoria, OH 44830 | OHD-004167219 |
| Carbon Products Division | 11709 Madison Avenue Lakewood, OH 44107 | OHD-004167383 |
| Electrode Systems Division | 12900 Snow Road Parma, OH 44130 | <u>OHD-003926748</u> |
| Specialty Polymers & Composites Division | Marietta, OH | OHD-077479467 |

For: sudden and nonsudden accidental occurrences.

The limits of liability are \$4,000,000 each occurrence and \$8,000,000 aggregate, exclusive of legal defense costs. The coverage is provided under policy number TBA, issued on 2/27/86. The effective date of said policy is 1/1/86.

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.



1230 W. Peachtree St., N. W.
P. O. Box 4985
Atlanta, Georgia 30302
(404) 875-9641
Telex 54-2445
TWX 810 751-3329

March 23, 1983

Regional Administrator
Environmental Protection Agency
Region V
230 S. Dearborn
Chicago, IL 60604

*ADDITIONAL INFORMATION
IS FILED WITH
OHD 000 821 454*

Gentlemen:

Hazardous Waste Facility
Certificate of Liability Insurance
Union Carbide Corporation
EPA #OHD-000821470, ILD-005152954, ~~000821454~~
ILD-000821462, OHD-077479467, OHD-00821454,
IND-077001147, OHD-000821462, OHD-004167219,
OHD-004167383, OHD-003926748, IND-000708545

In accordance with the terms of the Hazardous Waste Facility Certificate of Liability Insurance which we recently issued to your office, we are hereby notifying you of the expiration of this contract on April 30, 1983, in accordance with the provisions of Item 2 (e).

To assist you in matching up this notification with the original certification which was sent to you, I am enclosing a copy of the original certificate which we executed.

We feel that it is likely that this insured will purchase another policy at the renewal date but, because the renewal negotiation process has not been completed, we have no option but to give you the required advance notice of expiration of our coverage on April 30, 1983.

If renewal negotiations are satisfactorily completed, we will provide new certificates.

Sincerely,

Frank Kinnett

Frank Kinnett
Vice President
International Insurance Company

bm

Enc.

~~Also See 560-000-116~~
HAZARDOUS WASTE FACILITY CERTIFICATE OF LIABILITY INSURANCE

OHD 003 926 748

1. The International Insurance Company of Chicago, Illinois hereby certifies that it has issued liability insurance covering bodily injury and property damage to UNION CARBIDE CORPORATION of Chicago, Illinois in connection with the insured's obligation to demonstrate financial responsibility under 40 CFR 264.147 or 265.147. The coverage applies at Carbon Products Division - 12900 Snow Road, Parma, OH 44130 EPA Permit Number OHD-003926748

for non-sudden accidental occurrences.

The limits of liability are \$ 3,000,000. each occurrence and \$ 6,000,000. annual aggregate exclusive of legal defense costs. The coverage provided under policy number 560-000-116 issued on 11/1/82. The effective date of said policy is 11/1/82.

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer of its obligations under the policy.

(b) The Insurer is liable for the payment of amounts within any deductible applicable to the policy, with a right of reimbursement by the insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is demonstrated as specified in 40 CFR 264.147(f) or 265.147(f).

(c) Whenever requested by a Regional Administrator of the U.S. Environmental Protection Agency (EPA), the Insurer agrees to furnish to the Regional Administrator a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the Insurer or the insured, will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

(e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

I hereby certify that the wording of this instrument is identical to the wording specified in 40 CFR 264.151(j) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance, or eligible to provide insurance as an excess or surplus lines insurer, in one or more States.

Frank Kinnett

Frank Kinnett
(Authorized Representative)

International Insurance Company
% The London Agency, Inc.

P. O. Box 4985, Atlanta, GA 30302

CERTIFICATE ISSUED TO:

Regional Administrator

EPA Region 5

230 S. Dearborn

Chicago, Illinois 60604